INQUIRY-DRIVEN STRATEGIES FOR INNOVATION IN MEDICAL EDUCATION IN INDIA

CURRICULAR REFORMS

The CONSORTIUM of Medical Institutions
for reform of Medical Education in India

WHO-SEARO Project IND-HMD 017/G
SE/IND HRH 001/RB 92

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Editors :
Kusum Verma
Usha Nayar
B. V. Adkoli

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Editors

FOREWORD

The need for reorienting medical education in line with the health needs of the society is a matter of global concern, though the nature of changes envisaged by different countries, and the strategies contemplated for bringing about those changes, might vary considerably. Towards this end, restructuring undergraduate curriculum is an intervention which is invaluable and inevitable. The deliberations of a consortium of eight medical schools in India, who addressed the question of curricular reforms, by adopting an inquiry-driven strategy, is a testimony to the growing belief that a change 'is' possible, and there are several ways to bring about this change.

The concern for introducing changes in medical education has emerged from extramural factors as well as pressures from within the profession itself. The change in the demographic profile of countries, especially the increase in the aging population, degrading environment, population explosion resulting in diseases of poverty, emergence of new diseases including AIDS, resurgence of old diseases, childhood afflictions, growing immigration from developing to developed countries owing to globalization and free market economies, technological revolution resulting in urbanization and the resultant stress and diseases of affluence have all contributed to a new health situation to which medical education must respond urgently.

Within the medical profession the continuing explosion of scientific knowledge is the greatest challenge to the already over crowded curriculum with multiplicity of subjects and narrow specialities competing for curricular time. In some cases bureaucratic controls have restricted the autonomy of medical schools to innovate and change. The continuing growth in high technology has tended to erode the human touch resulting in a new ethical dilemma which should be addressed in the educational system.

Nevertheless, the medical education system all over the world has responded to some of these challenges. As early as in 1910, Abraham Flexner's report resulted in the separation of basic sciences from clinical teaching, and laid the foundation for the emergence of new departments. The next wave of changes began after the Second World War which prompted some medical schools to search for alternate tracks and educational strategies marked by student- centered learning and problem-based learning approaches.

WHO has always been in the forefront while taking initiatives to support health manpower development across the globe. Through its pioneering work of establishing a network of Regional and National Teacher Training Centres (RTTCs and NTTCs), and promoting fellowship and exchange programmes, WHO has facilitated the application of

educational science and has focused on the need to view medical education in the broader perspective of health care delivery.

The 1978 Alma Ata declaration of HFA/2000 through PHC is a major initiative to place medical education in the broader context of health delivery system. It became apparent that educational reforms must take into account the structure and requirements of the national health care delivery system, health problems prevalent in the region as well as the constraints of the medical profession besides student characteristics.

The Agenda for Action, launched by WHO in 1991, underlines three components, viz. setting standards, developing tools for assessment, and identifying appropriate strategies for change and follow-up through worldwide monitoring. The South East Asia Regional Office of WHO has, to its credit, the distinction of having arranged regional consultations on reorientation of Medical Education and bringing out a series of related publications.

There are other major players in medical education, viz. the World Federation of Medical Education (WFME) which proclaimed the Edinburgh Declaration in 1988 and organized the World Summit on Medical Education in 1993, and the Network of Community-oriented Health Institutions, besides leading centres in medical education in the USA, UK and Australia.

India, having one of the largest network of health care infrastructure and a pool of health personnel in the world, has been debating the issue of relevance and quality of medical education from time to time since the constitution of the Bhore Committee in 1946. Several organizations such as the Indian Association for the Advancement of Medical Education and the Medical Council of India, besides the Ministry of Health and Family Welfare, have grappled with the issue of making medical education more need based and task-oriented.

However, the work of the consortium of medical institutions to reform medical education can be singled out as a significant landmark, as it is based on a systematic inquiry-driven approach. It is pertinent to note how the strategies proposed by WHO for global action are being implemented by the institutes forming part of the consortium. The principle of attaining a common goal by collective effort utilizing a common protocol is a fascinating example of how to achieve **optimum utilization of resources.** Deliberations based on inter-institutional dialogue and liaison with other bodies such as the Medical Council of India would enable the building of a **national consensus.** The inquiry-driven strategy implies collection of a comprehensive database on the health situation and health needs, which will provide a **population perspective** to the curriculum planning exercise. The integrated teaching modules suggested in this work are based on **important public**

health problems of India or common conditions such as tuberculosis, AIDS, mother and child health care, cardio-pulmonary resuscitation, first aid, etc.

The modular approach is also found to be a very effective educational intervention for reducing the curriculum burden and promoting self-paced learning. The courses proposed in the curriculum, viz. behavioural science and medical ethics, are an attempt to fill the gap of psychosocial and humanistic aspects of care which are found lacking in the present curriculum. The concept of essential skills and core curriculum lays a solid foundation for a competency-based model which could be extended as an **experimental track.**

The consortium has plans to delineate an assessment strategy that will encourage **problem-solving orientation,** which is another strategy which has high feasibility as against grafting PBL approach in a traditional medical school.

The consortium has already constituted several task forces to work out a detailed teaching/learning methodology, produce of learning materials on thrust areas, develop assessment strategies, promote on-going health system research (HSR) and disseminate information to all medical schools in the country.

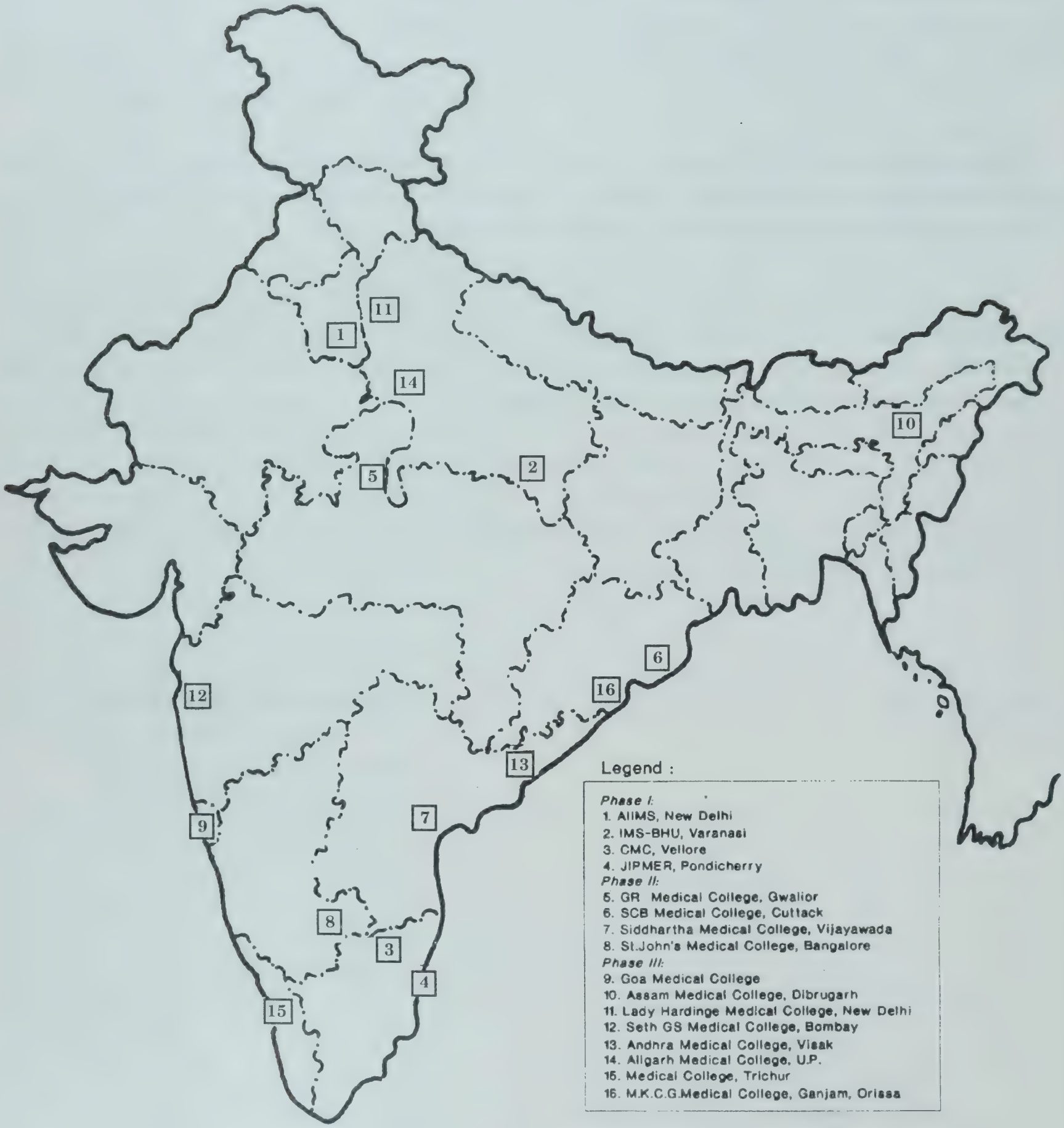
Thus, with a strong base of R&D activities built into the system, and with concerted inter-institutional efforts, the deliberations of the consortium of medical schools will be keenly watched, not only in the Indian sub-continent but also in other countries of the South East Asia Region and elsewhere.

January, 1995
New Delhi

Dr. Uton Muchtar Rafei
Regional Director
World Health Organization
South East Asia Region

Consortium of Institutions

Phase-II



Introduction

Eight years ago, to be more precise in November, 1986, a group of motivated medical educationists representing four medical colleges in India in collaboration with the Department of Medical Education, University of Illinois, Chicago (DME-UIC) met at New Delhi. All of them had a common concern of restructuring the medical education in tune with the health care needs of the country. Learning from the lessons learnt in the past, they resolved to address the issue by adopting an Inquiry-Driven Strategy - a strategy based on actual database resulting from an extensive inquiry. It was also decided to adopt a common protocol for initiating a co-ordinated and collective action. This marked the beginning of a consortium of medical institutions for reform of medical education. During the first phase (1989-90) the four institutions generated extensive data base, identified curricular deficiencies and proposed certain innovations. The findings of these deliberations were presented at a National Conference held at AIIMS in April, 1990 to a wider audience consisting of consortium institutions,. Deans of selected medical colleges, besides representatives from Ministry of Health, Medical Council of India, and WHO-SEARO. The proceedings resulted in a monograph entitled "Inquiry-Driven Strategies for Innovation in Medical Education in India", popularly called 'green book'.

The April, 1990 conference unanimously recommended the adoption of Inquiry Driven Strategy and enlargement of the consortium to spread the message to a larger number of medical colleges on a regional basis. Thanks to the approval given by the Government of India and financial assistance from the WHO-SEARO, the consortium could embark upon a second phase with more intensified activities.

During the second phase the consortium institutions deliberated on five main issues, viz, developing a list of essential skills to be performed by an MBBS doctor; a core curriculum which identified what a student 'must know' and what is 'desirable to know'; a set of integrated teaching modules on need based topics; a course on behavioural sciences; and medical ethics. What is presented in this monograph is essentially an extract from the deliberations made by eight consortium institutes on these issues, over a period of three years.

It is important to realize that the deliberations were made at different point in time, by several groups both disciplinary and inter-disciplinary, spread

across the consortium institutions. As such, it is extremely difficult to capture the authenticity and accuracy of the information and views often divergent emanating from diverse groups. Nevertheless, what is presented in this monograph is a consensus and collective view of selected brains. We fully believe that any exercise in delineating the curriculum is an evolving process which needs scrutiny, review and update from time to time.

A point of clarification on the sanctity of this work may be necessary. The onus of laying down the undergraduate curriculum rests on the Medical Council of India, which has initiated several activities in the recent past including a curriculum document. MCI has officially recognised "the consortium" for collaboration in curricular development and Teachers Training. What consortium has attempted is to delineate the undergraduate curriculum into two tiers viz, what an undergraduate 'must know' and what is 'desirable to know'. This we hope, is a useful strategy to cope with the every increasing curriculum load.

The list of 'essential skills' provide a basis for organizing teaching learning activities which are task oriented and competence based. The thirteen integrated teaching modules provide a basic framework for promoting both horizontal and vertical integration, a recommendation which is strongly voiced by the MCI and others. Besides a national health perspective has been added to it by choosing needbased topics.

We are aware of our limitations. We cannot call a curriculum document as 'complete' unless we have a teaching learning methodology and an assessment strategy built into it. The consortium has already constituted several taskforces to look into some of these issues. However, with a sense of humility, we would like to set the ball in motion, so that we have some thing to discuss and debate. The following quote should sum up what we wish to express.

"Look, this is what some of us have collectively arrived at. You may not totally agree with us. But we would like to work together for, we have a common concern."

S.K. Kacker
Director
AIIMS

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Section - I

A background of the consortium of Medical Institutions and the Inquiry-driven strategy adopted by the consortium since 1989 and subsequent developments are outlined in this section. The purpose of this section is to give an idea of the workdone so far.

Inquiry Driven Strategies For Reforming Medical Education in India

BACKGROUND

During the Sixth Plan, the Government of India gave priority to extension and expansion of rural health infrastructure through a network of community, primary and sub health centres. This commitment was renewed during the Seventh Plan (1985-90) by allocating Rs. 1096.35 crores which formed 32.3% of the Plan outlays for Health Sector.

To help support the emerging health infrastructure, the government also introduced a scheme for Re-orientation of Medical Education (ROME) with the following objectives to: i) introduce community bias in training of undergraduate medical students with emphasis on preventive and promotive services, ii) orient medical colleges, so that they become part of the health care system, iii) re-orient all the faculty so that hospital-based and disease oriented training was progressively complemented by community based and iv) health-oriented training for providing comprehensive primary health care, and to develop effective referral linkages between primary health centres, district hospitals, and medical colleges. However, in spite of a one-time allocation of Rs. 16 lakhs to each participating institution, the objectives of the scheme could not be achieved to the desired level. The reasons identified for lack of achievements were i) lack of commitment to the program at all levels, ii) slow progress in utilization of central allocation, and iii) absence of efforts to restructuring teaching and training programs at the medical college level.

Institutional Efforts to Overcome the Obstacles

During 1986, the All India Institute of Medical Sciences (AIIMS, New Delhi) in collaboration with the then Centre for Educational Development (subsequently Department of Medical Education-DME) of the University of Illinois at Chicago, College of Medicine, initiated a step-wise plan to address the issue. First, it invited three other institutions - Institute of Medical Sciences, Benaras Hindu University (IMS-BHU, Varanasi), Christian Medical College (CMC, Vellore), and Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER, Pondicherry) to form a Consortium of four institutions. Subsequently AIIMS, with the technical collaboration with DME, organized a symposium, Medical Education for Primary Care Needs-Experiences in Success and Failures, during March 23-25, 1987 in New Delhi. The four consortium schools, two invited schools of medicine from Egypt and Thailand, DME, the University Grant Commission (UGC), the Planning Commission, South East Asia Regional Office of the World Health Organization (WHO-SEARO), United States Agency for International Development (USAID), Medical Council of India (MCI), Ministry of Health and Family Welfare (MHFW), Government of India, etc., participated in the symposium.

Immediately following the symposium, the four institutions and DME developed a short term proposal with objectives to :

i) Initiate health services research for curricular change;

ii) Initiate context evaluation for decision making related to curricular change;

iii) Establish the consortium organization and cooperative protocol; and

iv) Decide on and plan a long term innovative activities based on the results of these short term projects.

The above proposal, submitted to WHO-SEARO through MHFW was approved in May 1989.

Implementation of the Proposal (1989-90) :

After two initial meetings in Delhi and Chicago, two workshops were held at Varanasi and Vellore, respectively. The workshops focused on health services research, and context evaluation related to curriculum innovation. The workshop objectives were to :

i) Consider a synthesis of the literature on curricular innovations in the context of India's goal of reorienting medical education;

ii) Initiate health services research and context evaluation for decision making related to curricular changes;

iii) Decide and plan on long term activities of the consortium on the basis of results of the short term projects.

To achieve the above objectives, the four consortium institutions conducted an inquiry to identify curricular changes and concurrently developed a core of institutional faculty committed to help formulate strategies for their implementation and evaluation. The data was collected on the prevalence of disease patterns at the outpatient and inpatient settings of the medical college hospital(s) and at the secondary and primary care centres. In addition, the perceptions of the faculty, residents and interns about curriculum and expectations of the patients and the community leaders whenever possible, were ascertained through questionnaires, structured interviews and informal meetings.

AIIMS concentrated to assess the perception of its department heads and students regarding its teaching programme. Fifteen department Heads involved actively in undergraduate teaching - three from pre-clinical, four from para-clinical and eight from clinical departments were selected for the study. The department Heads were interviewed to obtain their perceptions and questionnaire was mailed to residents and interns. The most important problems identified by the clinical Heads were the lack of development in clinical skills, followed by learning and assessment, weaknesses in the humanistic attitudes, especially in helping family members cope with the chronically ill, paying attention to religious and cultural values, and privacy and dignity of the patients. Surprisingly, the response

from the residents and interns complemented that of the clinical Heads. An overwhelming majority of students (65% and above) stated that the emotional, ethical, social and economic aspects of diseases need revision in the departments of medicine, surgery, community medicine, and obstetrics and gynaecology. Similarly a high percentage (more than 60%) of students felt that teaching of practical skills in diagnosis and treatment of medical disorders need revision.

The investigators at IMS-BHU :

i) Conducted an inquiry to determine i) disease spectrum of the inpatients and outpatients seen at the three primary health care centres in Varanasi district, ii) disease spectrum of inpatients seen at the district hospital and University hospital and iii) common illnesses seen by a select group of general practitioners;

ii) Conducted an inquiry to assess the perception of the medical students and faculty about the training needs of the students and their opinion on the adequacy of the present curriculum to provide clinical experience under (i) above; and

iii) Presented the results of the inquiry , under (i) and (ii) above to the Heads of the departments and assessed their recommendations for appropriate curricular reform.

The results of the inquiry at IMS-BHU amply demonstrated that the department Heads were well aware of the weaknesses in the curriculum and were of the opinion that these weaknesses be removed by appropriate curricular reforms. Similarly, a substantial majority of the IMS-BHU graduates also expressed a similar opinion and would like the institute to incorporate the recommended revision into its curriculum.

The Christian Medical College, Vellore conducted inquiry and collected relevant data related to i) outpatient morbidity statistics in primary, secondary and tertiary care settings, ii) perceptions of the interns and recent graduates about medical training they received, iii) perception of the medical faculty about the training they provided to the students and iv) perception of the Medical Superintendents of the Mission Hospitals where the CMC graduates have worked

in the past. Summarizing the results of the inquiry, the investigators at CMC concluded that bedside teaching has changed very little over the decades and there is undue stress on i) disease oriented approach, ii) elicitation of physical findings rather than expertise of history and iii) utilization of inpatients with little emphasis on outpatient diseases.

JIPMER conducted an inquiry by administering a structured questionnaire to both the faculty and the students of the institute with the objective of eliciting any perceived deficiencies of the undergraduate training program in the context of primary health care (PHC) and health for all (HFA). Summarizing the faculty perceptions, the investigators concluded that a majority of JIPMER faculty felt that the students are not getting appropriate instructions in i) psycho social aspects of illness, ii) ethical issues, iii) skills in management and communication and iv) integrated learning with other health professionals. The investigators also conducted an analysis of the question papers of the examination conducted by the University in earlier years to assess its relevance to PHC and HFA. This study (10 years papers in obstetrics and gynaecology) revealed that no questions were set on some important/common topics such as antenatal care, normal labor, pre-eclampsia, nutrition in pregnancy, social obstetrics, and cancer of the cervix.

The results of the inquiry conducted by the four institutions were synthesized in a conference held in New Delhi on April 24-25, 1990. A consolidated synopsis of the curricular deficiencies identified by the four consortium institutions alongwith suggested remedial measures is presented in Table I.

The conference participants consisting of the consortium institutions, officials of MHFW, the University Grant Commission, the Medical Council of India, the National Academy of Medical Sciences and SEARO-WHO were encouraged by the Inquiry-Driven Methodology adopted to elicit information on the strengths and weaknesses of the existing medical curriculum. At the end of the conference the following recommendations were made by the participants to :

Table-I

Synopsis of Curricular Deficiencies Identified During the August 1989-April 1990 Phase of Inquiry

	Selected Finding of the Inquiry	*Suggested Remedial Measures*
i)	**Ethical, moral and humanistic attitudes** 60% to 80% of consortium faculties found deficiency in the teaching. Less than 50% assessed these attitudes. According to the graduates of the consortium 52% to 90% found the training inadequate.	a) Introduction of behavioural sciece course in preclinical phase. b) Introduction of clinical role models and simulations etc. during clinical phase. c) Extramural inputs from department such as philosophy from sister institutions should be encouraged. d) Due weightage should be given in assessment.
ii)	**Discrepancy between curricular content, and morbidity pattern in the ambulatory setting :**	

Morbidity pattern	**Content coverage by faculty**	**Topics covered in examination** (students' perception)
Upper Resp. Inf.	Ischemic heart Dis.	Asthma
Skin dis.	Diabetes	Malaria
Trauma	Hypertension	Thyroid
Musculoskeletal	Urinary Tract Inf.	Typhoid
TB	Upper Resp.	Tetanus
Anaemia	Convulsions	Anaemia
Fungal	low back pain	Renal Failure
Epilepsy	Vertigo	Pericardial Dis.
Helminthiasis	—	—
Hypertension	—	—

Teaching to be aligned with the morbidity data.

iii)	**Topics of national health priority** *not* **assessed in examination** antenatal care, normal labour, pre-eclampsia, nutrition in pregnancy, normal menstruation cervical cancer (nil); vasectomy (0.6%); fluid balance, shock and wound healing (0.3%); oral cancer (2%); neonatal tetanus and prematurity (nil); primary complex, PEM, ICDS (once in last 5 years)	Higher degree of priority should be given to these and other topics of national importance.
iv)	**Skills in patient management and communication**	
	55% to 70% of graduates felt that skills required for solving medical problems required revision; 43% to 70% felt likewise for surgery and other specialties.	Introduction of clinical clerkships in medicine, surgery, and pediatrics; formative and summative assessments of these skills.
	33% of graducates lacked confidence in their ability to manage patients on their own; 30% lacked the ability even under supervision	
	Patients' expectations of doctor's services in primary care centres and out-patient departments revealed deficiencies in the area of communication (52% and 45% respectively)	More emphasis on both teaching and assessment of communication skills : behavioural science course to be introduced from preclinical year.
v)	**Analytical skills :** problem formulation, hypothesis testing, etc. not included	Student-centred, problem-solving approach to teaching/learning for developing analytical skills.
vi)	**Lack of coordination between adoption of new technology and its inclusion in curriculum.**	
a.	Imaging techniques demand knowledge of cross-sectional anatomy.	Regional anatomy teaching to be replaced by cross-sectional anatomy teaching.
b.	Monitoring of physiological parameters in wards demand skills in use of monitoring equipment.	Amphibian practicals to be replaced by human experiments.
c.	Laboratory data in biochemistry demand analytical and problem-solving skills.	Traditional biochemistry practicals to be replaced by problem-solving moudules involving assessment of laboratory data.

- Promote dissemination of consortium mission and activities;
- Expand inquiry-driven methodology workshops in other parts of the country;
- Better address through curricular reform moral, ethical and psychosocial aspects of health care, training, and student socialization.
- Orient student assessment procedures towards HFA/ PHC concepts and curricular reforms; and
- Effect an ongoing process of monitoring in terms of indicators and tools to evaluate the input, process of innovation planning.

However, the most important recommendations made the April, 1990 conference was that the consortium should enlarge to include a select group of State/Union Territory medical colleges and their clinical faculty should be exposed to the concepts of the inquiry driven strategy. The select faculty for the invited medical colleges should go through the process to identify the curricular reform mentioned in Table I, with a major emphasis on strategies for implementation of the identified reforms and their evaluation.

THE SECOND PHASE (1992-1994)

The consortium institutions met in early 1991 to develop a plan of action, subsequent to the April 1990 conference. After some discussions, it was agreed to approach SEARO-WHO through MHFW. Subsequently a proposal was developed and it was funded in October 1991. The main objectives for the second phase were :

i) Each of the four founding members of the consortium should invite one additional medical school on the regional basis to become associate member of the consortium and establish twinning mechanism to introduce inquiry driven strategy in that institution.

ii) Each of the consortium members should identify eight faculty members - one each from pre-clinical and para-clinical and six from clinical - who would act as catalysts in promoting the curricular reforms in their own institution as well as in the associate member institution.

iii) The four consortium institutions would selectively work towards implementation of curricular reforms identified during the earlier phase.

iv) The eight selected faculty from each of the four consortium institutions would visit their respective associate institution for a period of five days to i) establish rapport with the new institutional faculty, ii) help initiate inquiry-driven strategy and iii) help identify facilitating and hindering factors for incorporating educational reforms.

The Planning Meeting :

The work on the second phase began with the meeting of Deans/Principals of the eight institutions and DME representative held in New Delhi in March 1992 to develop a plan of action. The participants agreed on the following agenda and its implementation.

Situation Analysis Through Site Visits :

A group of 8-10 faculty members from different disciplines who were involved in the consortium work visited the newly associated institute and conducted a workshop. The purpose of this workshop was to establish a rapport with the faculty and initiate them into the inquiry driven process. AIIMS visited Gwalior Medical College, IMS-BHU visited S.C.B. Medical College, Cuttack, JIPMER visited St. John's Medical College, Bangalore and CMC, Vellore visited Siddhartha Medical College, Vijayawada, A.P.

Action Plan Workshop :

An Action Plan workshop was held at AIIMS, New Delhi from 30th April- 2nd May 1992 involving 6-8 representatives from each of the eight institutes to develop a common protocol for the activities of the second phase. The deliberations made in this workshop enabled the consortium to define the scope of the second phase.

Special areas of work were identified as defining a core curriculum for MBBS students, identifying and implementing skills for imparting primary health care and handling emergencies, preparing integrated teaching modules on common disorders and courses on behavioral sciences and medical ethics. Following the action plan workshop each of the consortium institutes started working on these areas.

Core Curriculum :

Knowledge is increasing at an exponential rate while the time available for training for the MBBS degree is fixed. It was decided that each of the Consortium institutes would critically look at the curriculum and identify each topic as 'Must Know', and 'Desirable to Know' or 'good to know'. The approach taken by the consortium institutes in drafting the core curriculum is multi-disciplinary rather than disciplinary. For instance, anatomy curriculum was discussed by the surgeons and then by the interdisciplinary group to decide what should be included or excluded in anatomy. This exercise helped in defining the 'must know', and 'good to know' contents and taking away the redundancy from a given subject area.

List of Essential Skills :

The consortium has finalized a list of essential skills which a recent graduate should be able to perform. This list has been finalized after circulation of the draft to all the medical colleges and selected GPs. The steps taken in arriving at the list of essential skills have been outlined in Figure 1 (see on next page). It is obvious that major part of the skills would be acquired during internship period.

Integrated Teaching Modules :

The consortium has recommended adoption of integrated approach to curriculum planning which offers a holistic view of the medicine and promotes clinical problem solving. AIIMS has already tried out a module on tuberculosis on a group of students from AIIMS, local medical colleges of Delhi and a few students from abroad. This module utilized inputs from the departments of microbiology, pathology, pharmacology, medicine, pediatrics, radiology, surgery, orthopedics, obstetrics and gynaecology and community medicine. The teaching methodology included lectures (2), practicals (6), seminars (4) and small group learning (15) totaling 27 hours. On similar lines, other institutions have developed modules on topics such as diarrhoeal diseases, diabetes mellitus, first aid and CPR, hypertension, jaundice, chest pain, upper gastro intestinal bleeding etc. The experience at AIIMS and other institutes suggests that modular approach is highly appreciated by the students though it means hard work on part of the faculty.

Essential Skills

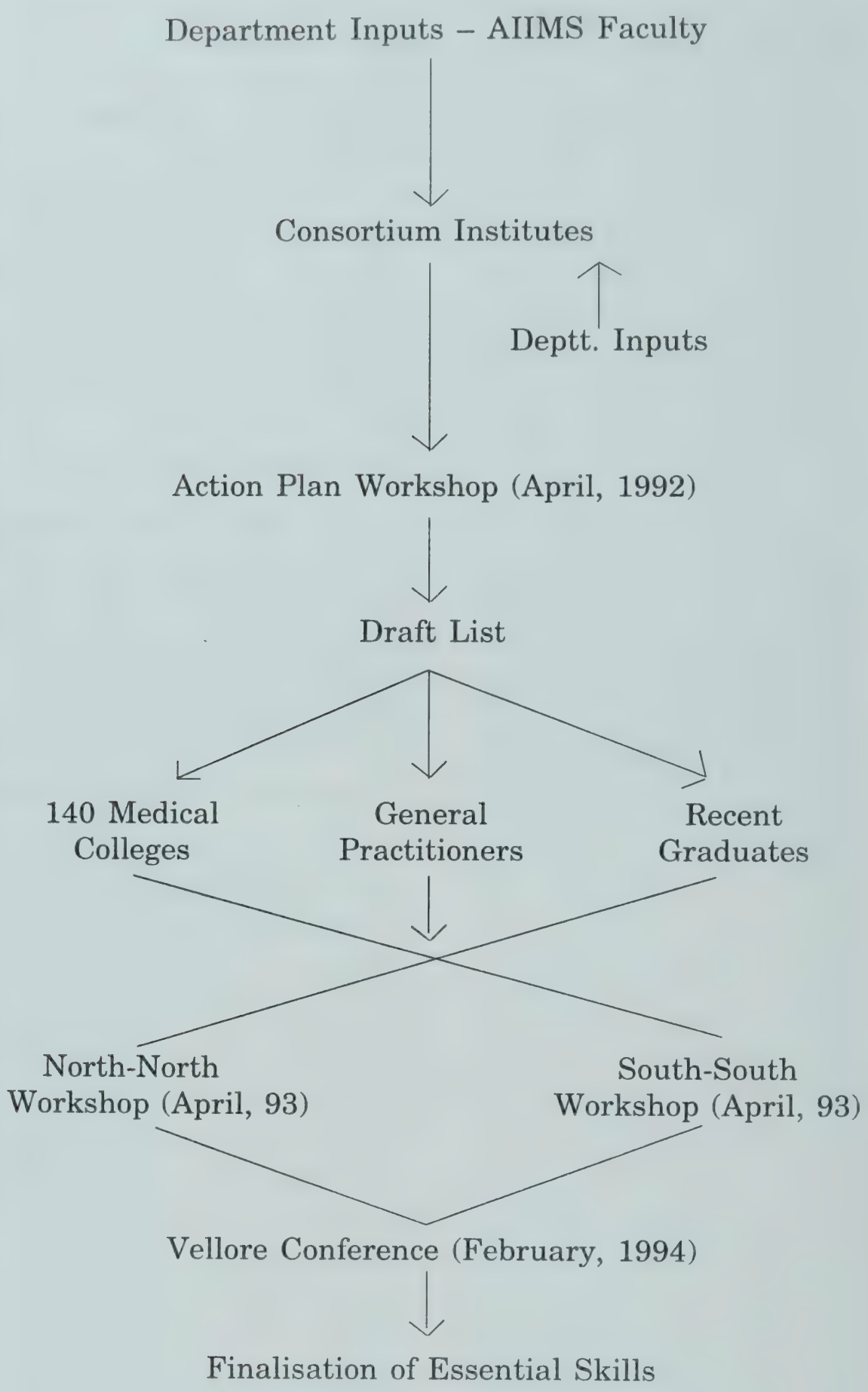

Figure-1

North – South Workshops :

In continuation of the earlier initiatives four institutions in the northern region (AIIMS, New Delhi; IMS-BHU, Varanasi; GR Medical College, Gwalior; SCB Medical College, Cuttack;) organised a workshop at the Institute of Medical Sciences, BHU, Varanasi from 22nd-24th April, 1993. Similarly four institutions in the southern region (CMC, Vellore; JIPMER, Pondicherry; St. Johns, Bangalore; Sidhartha Medical College, Vijaywada) organised a workshop at JIPMER, Pondicherry from 14-16th April, 1993. The north and the south workshops resulted in two independent curriculum documents which were finally synthesized into one single document at a National Conference held at CMC Vellore from 21st-23rd February, 1994.

Vellore Conference :

The main outcome of the Vellore Conference included a curriculum document which classified contents into what a student "Must Know" and what is "Good or Desirable to Know". In addition, a list of skills necessary for a doctor to function effectively as a primary health care practioner, a course on behavioural sciences and medical ethics and integrated teaching modules on 16 topics of national health importance were discussed.

What is presented in this book is a consolidated draft of the curriculum which gives the learning objectives, a list of skills to be learnt in each subject and a suggestive list of topics for integrated teaching.

Where do we go from here?

The process of curricular change is slow, often unimpressive and always incomplete. What has been intended is far exhaustive and ambitious. It is proposed to deliberate further upon the detailed plan of teaching methodology and the assessment strategy for the course. A plethora of learning resource materials will have to be developed, packaged and distributed amongst medical colleges for facilitating the implementation of the curriculum. We need also to establish mechanism for on-going HSR and dissemination of the findings of the curricular changes. The Consortium has already constituted several institution based Task Forces which will conduct in-depth deliberations on each of the issues identified above.

A Last Word of Caution :

Many have suggested the name of Inquiry-driven curriculum for this document. No document worth the name Inquiry-driven Curriculum can afford to be closed to the new ideas and ideals on education. The process of inquiry will and must continue to evolve, change or modify in response to new needs. And that is the spirit in which this curriculum document needs to be examined.

Section - II

In this section, we present the curriculum of undergraduate medical education, encompassing the departmental objectives, course content, and skills to be developed in each discipline. The course content is classified under two categories : (A) Must Know (which appears in bigger type size) and (B) Good to Know (which appears in smaller type size through out this section). A consolidated list of Essential Skills for MBBS graduate, a course on Behavioural Science and Medical Ethics are also presented in this section.

Undergraduate Medical Education

INSTITUTIONAL GOALS AND OBJECTIVES

INSTITUTIONAL GOALS :

The teaching and training during MBBS course will equip the undergraduate to provide health care appropriate to his/her position in the health team to an individual and community in health and sickness.

Objectives :

At the end of the teaching/training the undergraduate will be able to :

Diagnose and manage common health problems of the individual and the community appropriate to his/her position as a member of the health team at primary, secondary and tertiary levels.

Be competent to practise curative, preventive, promotive and rehabilitative medicine and understand the concepts of primary health care.

Understand the importance and implementation of the National Health Programmes in the context of the national priorities.

Understand the socio-psychological, cultural, economic and environmental factors affecting health and develop **humane attitude** required for professional responsibilities.

Develop the ability for continued self learning with a scientific attitude of mind and acquire further expertise in any chosen area of medicine.

List of Skills for MBBS Graduate

At the end of an undergraduate training programme in a medical college, it is expected that the doctor will be able to:

I. CLINICAL

*1. Obtain a proper relevant history, perform a humane and thorough clinical examination including internal examinations (per-rectal, per-vaginal) and examinations of all organs/systems in adults and children including neonates.

*2. Do psychiatric evaluation and recognise common psychiatric illnesses.

*3. Use the Stethoscope, B.P.Apparatus, Auroscope, Thermometer, Nasal Speculum, Tongue depressor, Weighing scales, vaginal Speculum, Percussion hammer, measuring tape, proctoscope, tuning fork and head mirror.

*4. Arrive at a logical working diagnosis after clinical examination.

*5. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.

*6. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

a. Patient,
b. Disease,
c. Socio-economic status,
d. Institutional/governmental guidelines.

7. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

8. Monitor growth and development of children and differentiate normal from abnormal.

9. Assess severity of dehydration.

10. Assess and manage fluid/electrolyte and acid-base imbalance.

11. Detect and institute corrective measures for nutritional deficiencies.

*12. Determine gestational age.

*13. Demonstrate surface marking of common superficial arteries, veins, nerves and viscera.

II. INTERPRETIVE

*1. Interpret abnormal biochemical laboratory values of common diseases.

*2. Interpret skiagrams of common diseases.

3. Identify irrational prescriptions and explain their irrationality.

*4. Interpret serological tests such as VDRL, ASLO, Widal, HIV, Rheumatoid factor, Hepatitis and TORCH infections.

5. Interpret antimicrobial sensitivity reports.

6. Interpret peripheral smear of common diseases.

III. ETHICAL AND AFFECTIVE

1. Demonstrate empathy and humane approach towards patients, relatives and attendants.

2. Demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family.

3. Develop a proper attitude towards patients, colleagues and other staff.

4. Maintain an ethical behaviour in all aspects of medical practice.

5. Develop a holistic attitude towards medicine taking in social and cultural factors in each case.

6. Keep patients' welfare foremost to provide quality care as well as avoid consumer initiated legal problems.

7. Obtain informed consent for any examination/procedure.

8. Appreciate patients' right to privacy.

9. Motivate colleagues, community and patients to participate actively in national health programmes.

10. Motivate people regarding desirability of blood and organ donation and autopsies.

11. Develop a positive attitude to pursue self directed learning to continuously keep abreast of advances and also motivate colleagues to do the same.

IV. COMMUNICATION

*1. Write a complete case record with all necessary details.

2. Write a proper discharge summary with all relevant information.

3. Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.

4. Assess the need for and issue proper medical certificates to patients for various purposes.

5. Establish rapport and talk to patients, relatives and community regarding all aspects of medical care and disease.

V. MANAGERIAL

1. Provide leadership to a medical team and promote team spirit in time of :

   a. Disasters

   b. Mass casualties

   c. Organizing health programmes.

2. Organise antenatal, postnatal, well-baby and other clinics.

3. Organise and give training in first aid.

4. Plan and manage health camps such as family welfare camp.

*5. Adopt universal precautions for self protection against HIV and hepatitis and counsel pateints.

6. Organise and carry out investigation of an epidemic and institute corrective/preventive measures.

7. Manage stores, indenting and stock keeping relevant to managing a primary health centre or a general practice set up.

8. Maintain cold chain for vaccines.

9. Collect, present and report vital health statistics with special reference to national health programmes.

VI. MEDICO-LEGAL

1. Examine and prepare proper certificates in the following medico-legal situations:

   a. Injured patient.

   b. Sexual offences.

   c. Determination of age.

   d. Intoxicated patient.

2. Prepare proper certificates of birth and death.

3. Record dying declaration.

4. Give evidence in a court of law as an expert witness.

5. Collect and do proper labelling, preservation and despatch of medico-legal specimens.

6. Perform, record findings and issue a report for a medico legal autopsy.

VII. LABORATORY

1. Be able to collect and transport materials for various pathological tests including histopathology, cytopathology, microbiology and biochemistry.

*2. Do complete urine examination including microscopy.

*3. Do and interpret HB, TLC, DLC, ESR, PCV, BT, CT and blood smear for parasites and red cell morphology.

4. Do blood grouping and cross matching.

*5. Do stool exam for ova, cysts, and occult blood; and hanging drop for vibrio cholerae.

6. Perform skin scrapings and do a KOH preparation for fungus infections.

7. Do and examine a wet film of vaginal smear for Trichomonas and fungus.

*8. Perform and interpret Gram's stain, Albert's stain, Ziehl-Nielsen or modified Ziehl Nielsen's stain.

9. Do cell counts and gram stain of CSF and other body fluids.

10. Perform skin sensitivity tests for drugs and serum.

11. Perform and read Mantoux test.

12. Prepare slit skin and nasal smear for lepra bacilli.

13. Record and interpret an ECG and be able to identify common abnormalities like myocardial infarction and arrhythmias.

VIII. MANIPULATIVE

1. Start i.v. line and infusion in adults, children and neonates.

2. Do venous cutdown.

*3. Give intradermal / SC/ IM/IV injection.

4. Insert and manage a C.V.P. line.

5. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.

6. Pass a nasogastric tube.

7. Pass a stomach tube and do stomach wash.

*8. Administer enemas.

9. Perform vasectomy.

10. Perform circumcision.

11. Perform reduction of paraphimosis.

12. Do Proctoscopy.

13. Do injection and banding of piles.

14. Incise and drain superficial abscesses.

15. Manage superficial wounds and do suturing of superficial wounds and wound toilet.

16. Remove small cutaneous/subcutaneous swellings.

17. Maintain airway (tracheostomy / endotracheal intubation/ cricothyroidostomy).

18. Control external haemorrhage.

19. Apply skin traction.

*20. Apply figure of 8 bandage for fracture clavicle.

*21. Apply POP slabs/casts and splints.

22. Transport safely victims of accidents including those with spinal injury.

23. Reduce colle's fracture.

24. Reduce shoulder dislocation.

25. Reduce tempro-mandibular joint dislocation.

26. Record visual acuity.

27. Examine anterior segment of eye.

28. Remove extraocular foreign body.

29. Incise and drain lid abscess.

30. Perform epilation of cilia.

31. Do lumbar puncture.

32. Do Pleural/peritoneal tap.

33. Aspirate liver abscess.

34. Take a pap smear.

35. Take punch biopsy of cervix.

*36. Conduct normal vaginal delivery.

37. Do artificial rupture of membranes.

38. Perform and suture episiotomies.

39. Apply outlet forceps.

40. Do post partum tubectomy.

41. Perform MTP in the first trimester and be able to do evacuation in incomplete abortion.

42. Insert and remove IUCD.

43. Catheterise bladder in both males and females.

44. Perform syringing of ear.

45. Do nasal packing for epistaxis.

46. Perform nerve blocks like infiltration, digital, pudendal, paracervical, and field block.

47. Prepare ORS.

48. Estimate residual chlorine and chlorine demand for producing safe drinking water.

49. Relieve tension pneumothorax by inserting a needle.

50. Administer O_2 by mask, catheter, O_2 tent and be able to handle O_2 cylinder.

51. Advise dietetic management in different diseases and teach mothers feeding of new borns, infants and children.

52. Implement sterilization and antiseptic measures.

53. Perform extraction of loose teeth.

*54. Insert flatus tube.

IX. EMERGENCY MANAGEMENTS

1. Be able to diagnose and provide emergency management of antepartum and postpartum haemorrhage.

2. Provide first aid to patients with peripheral vascular failure and shock.

3. Manage acute anaphylactic shock.

4. Manage diarrhoeas/dysenteries; Assess dehydration; Prepare and administer oral rehydration therapy (ORT).

5. Manage emergencies of drowning.

6. Manage common poisonings.

7. Manage acute pulmonary oedema and left ventricular failure.

8. Manage acute severe bronchial asthma.

9. Do emergency management of epilepsy and status epilepticus.

10. Do emergency management of comatose patients regarding airway, positioning, prevention of aspiration and injuries.

11. Assess degree of burns and administer emergency management.

12. Manage hyperpyrexia.

NOTE:
Skills marked * to be learned during undergraduate course; Rest to be learnt during internship.

Behavioural Sciences Course

Departmental Objectives :

At the end of the course, the student should be able to:

Understand nature and development of different aspects of normal human behaviour like learning, memory, motivation, personality, and intelligence.

Recognize differences between normal and abnormal behaviour.

Understand how psychological and social factors influence man's behaviour throughout his life cycle and how they affect his health and response to illness.

Conduct the clinico-social evaluation of the patient in respect to attributes like socio-economic status; attitude to health and disease and health services.

Establish harmonious doctor-patient relationship.

Communicate effectively with the individual, family and the community.

Possess and utilise the knowledge and skills of behavioural science/techniques for adoption of health practices.

Course Contents

I. INTRODUCTION TO TYPES OF BEHAVIOURAL SCIENCES

1. Sociology, psychology, and anthropology relevant to health and disease.

2. Aspects of health economics and management sciences.

II. FAMILY STUDIES

1. Family support system : Role of family in health and disease.

2. Types of families : Structure and functioning; Social problems.

III. ILLNESS AND HEALTH

1. Mores about illness and health.

2. Beliefs, custom, norm.

IV. SOCIO-ECONOMIC STATUS

1. Relationship of socio economic status with health and disease.

2. Measurement of socio economic status.

V. COMMUNICATION SKILLS

1. Interview techniques; Methods of communication with patients and their relatives; Role of communication in interpersonal relationship.

2. Communication medias.

VI. METHODS OF SOCIAL WORK

1. Social case work.

2. Social group work; and Community organisation.

VII. SOCIAL SECURITY

1. Social assistance and social insurance, social security schemes.

VIII. INTRODUCTION TO PSYCHOLOGY

1. Basis of human behaviour.

2. Application of psychology to medicine.

3. Role of nature vs. nurture in shaping human behaviour.

IX. HUMAN DEVELOPMENT : INFANCY TO ADOLESCENCE

1. Stages of development; and Individual differences.

2. Behavioural expectancies and problems.

X. HUMAN DEVELOPMENT : ADULTHOOD TO OLD AGE

1. Development tasks of adulthood and old age; Adjustment problems in old age.

XI. PERSONALITY DEVELOPMENT

1. Types of personality.

2. Premorbid personality and relationship with illness behaviour.

XII. DEATH AND DYING

1. Reactions of terminally ill patient and family.

2. Breaking news of fatal illness/death to the family.

XIII. LEARNING AND CONDITIONING

1. Nature of learning.

2. Performance, role of motivation in learning and methods to make learning effective.

3. Learning of adaptive and maladaptive behaviours.

4. Various learning methods like association, cognitive, verbal, motor and social.

XIV. COGNITIVE PROCESSES

1. Sensory processes: attention, sensation, perception and thinking.

2. Sensory processes and psychopathology.

3. Problem solving, decision making, and communication in thinking process.

4. Salient features of abnormal thinking.

5. Methods of improving memory.

6. Forgetting and its determinants.

7. Thinking process like concept formation and role of language.

XV. EMOTION

1. Relationship of emotions to illness.

2. Development of emotive behaviour and its physiological basis.

XVI. INTELLIGENCE

1. Nature of intelligence.

2. Role of genetic and environmental influences in intelligence.

3. Assessment of intelligence in clinical setting.

4. Growth of intelligence from birth to old age.

XVII. BEHAVIOURAL MEDICINE

1. Behavioural aspects applied to illness.

2. Methods of behavioural treatment for psychosomatic diseases.

XVIII. COPING AND STRESS

1. Different stressors and their effects.

2. Methods of adaptive and maladaptive coping and stress management.

XIX. DOCTOR-PATIENT RELATIONSHIP

1. The doctor-patient relationship.

XX. ILLNESS BEHAVIOUR

1. Tolerance, threshold of pain and sensitivity.

2. Sick role.

3. Role of socio-cultural background in illness behaviour.

XXI. PAIN

1. Psychology and perception of pain.

2. Management of pain by psychological methods.

XXII. PSYCHOLOGICAL METHODS OF TREATMENT

1. Counselling.

XXIII. ATTITUDES

1. Nature and development of attitudes.
2. Theories and methods to change attitudes.
3. Measurement of attitudes.

Methods of Teaching

Lecture, practical work and small group discussions.

Assessment

To be included in psychiatry and community medicine with appropriate weightage.

MEDICAL ETHICS

COURSE CONTENTS

I. INTRODUCTION TO MEDICAL ETHICS

1. What is ethics?
2. What are values and norms?
3. Relationship between being ethical and human fulfilment.
4. How to form a value system in one's personal and professional life?
5. Heternomous ethics and autonomous ethics.
6. Freedom and Personal responsibility.

II. DEFINITION OF MEDICAL ETHICS

1. Difference between medical ethics and bioethics.
2. Major Principles of Medical Ethics-

Beneficence	-	fraternity;
Justice	-	equality;
Self determination(autonomy)	-	liberty.

III. APPROACHES TO MEDICAL ETHICS

a)	Utilitarian	- Fletcher	-	consequences;
b)	Deontological	- Kant	-	duty;
c)	National Law	- Aquinas	-	reason;
d)	Justice	- Rawls	-	equality;
e)	Modified Deonotology	- Ross	-	intuition.

IV. PERSPECTIVES OF MEDICAL ETHICS

1. The Hippocrates oath.
2. Medical Council of India Code of ethics.
3. The Declaration of Helsinki.
4. Nazi doctors and human experimentation.
5. The WHO declaration of Geneva.
6. The Religious Perspective of Ethics.

V. ETHICS OF THE INDIVIDUAL

1. The patient as a person; The right to be respected; Truth and Confidentiality; and The autonomy of decision.

2. The concept of disease, health and healing.

3. The right to health.

4. Ethics of behaviour modification.

5. The physician - patient relationship; Teacher - student relationship; and Peer relationship.

6. Organ donation.

VI. ETHICS OF HUMAN LIFE

1. What is human life:Criteria for distinguishing the human and the non human.

2. Reasons for respecting human life.

3. The beginning of human life. Conception, contraception and Abortion; Prenatal sex-determination.

4. In-Vitro fertilisation (IVF), Artificial insemination by husband (AIH), and Artificial insemination by donor (AID).

5. Genetic Engineering.

6. Surrogate motherhood, Gamete in-vitro fertilisation technique (GIFT), Zygote in vitro fertilisation technique (ZIFT), TOT.

7. Rights of children, psychiatric patients and mentally and physically handicapped persons.

VII. THE FAMILY AND SOCIETY IN MEDICAL ETHICS

1. The ethics of human sexuality.

2. Family Planning perspectives.

3. Prolongation of life; Euthanasia - society's perspective.

4. Cancer and terminal care.

VIII. DEATH AND DYING

1. Use of life-support systems.

2. Death awareness; The moment of death.

Prolongation of life : ordinary and extraordinary life support.

3. Advanced life directives - The living will; Euthanasia : passive and active.

4. Suicide : The ethical outlook.

5. The right to die with dignity.

IX. PROFESSIONAL ETHICS

1. Contract and confidentiality.

2. Charging of fees; Fee splitting.

3. Prescription of drugs; Over investigating the patient; Unnecessary referrals and patient sharing. Low cost drugs, vitamins and tonics.

4. Allocation of resources in health care.

X. RESEARCH ETHICS

1. Animal and experimental research/humaneness.

2. Human experimentation. Human volunteer research : informed consent.

3. Drug trials.

4. Authorship.

XI. ETHICAL WORKUP OF CASES

1. Gathering all scientific factors; all human factors; all value factors.

2. Identify areas of value - conflict. Setting of priorities.

3. Working out criteria towards decisions.

TEACHING LEARNING METHODOLOGY

- Although many of these topics might be covered in Forensic medicine , but purpose of this course is to make impact on students.
- It should have least number of lectures. Teaching to be preferably by case examples / case discussion and role model.
- To be administered in final year MBBS course by a group of faculty drawn from a number of departments with one of them acting as coordinator.
- Assessment of course to be built into assessment of clinical subjects either as short case or viva-voce or OSCE station. It may be part of internal assessment or of final professional examination.

ANATOMY

Departmental Objectives :

At the end of the course, the student should be able to:

Comprehend the normal disposition, inter-relationships, functional and applied anatomy of the various structures in the body.

Identify the microscopic structure of various organs and tissues and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes.

Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and systems. He/She should be able to locate the site of gross lesions according to the deficits encountered.

Demonstrate knowledge of the basic principles of embryology including genetic inheritance and sequential development of the organs and systems, recognise the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/She should be able to explain the developmental basis of the major variations and abnormalities.

Course Contents

I. GENERAL EMBRYOLOGY

1. Definition of embryology; gestation period: subdivisions; definition of gonads: testis, ovary; definition of gamete: sperm, ovum; gametogenesis, migration of primordial germ cells into gonadal ridge; spermatogenesis; structure of sperm, oogenesis; structure of ovum; growth of ovarian follicles, ovarian and uterine cycles.

2. Sperm in the male genital tract; sperm in the female genital tract; activation and capacitation of sperm in the female genital tract.

First week of Development

3. Definition and process of fertilisation, formation of Zygote; cleavage division; formation of morula and blastocyst; implantation; formation of decidua - its subdivisions. Types of implantation and abnormal sites of implantation.

Second week of Development

4. Differentiation of embryoblast and trophoblast; changes in the embryoblast - bilaminar germ disc; changes in the trophoblast; formation of cytotrophoblast, syncytiotrophoblast, amniotic membrane, yolk sac, extra embryonic mesoderm and extra embryonic coelom and connecting stalk; formation of chorion, amniotic cavity, primary yolk sac cavity; appearance of prochordal plate.

Third week of Development

5. Appearance of primitive streak and primitive node; formation of intraembryonic mesoderm resulting in trilaminar germ disc; formation of notochord, buccopharyngeal and cloacal membranes, pericardial bar, paraxial, intermediate and lateral plate mesoderm, secondary yolk sac, intraembryonic coelom and allantoic diverticulum; derivatives of ectoderm, endoderm and mesoderm.

Fourth To Eighth week of Development

6. Formation of somites, neural tube, cephalocaudal folding, lateral foldings, body form, stomodeum, proctodeum, gut and vitelline duct; subdivisions of gut into foregut, midgut and hindgut.

Third to Tenth Month of Development

7. Maturation of tissues and organs and rapid growth of body.

8. Estimation of age; horizons of development.

Placenta

9. Formatioin of placenta and chorionic villi; decidua basalis; features and functions of placenta; placental circulation; abnormalities; placental barrier; types of placenta.

Umbilical Cord

10. Formation of umbilical cord; features of umbilical cord.

Amniotic Cavity

11. Amniotic cavity and membrane; amniotic fluid - functions; expansions of amniotic cavity and fusion with chorion; chorion leave with decide capsularis; decidua capsularis with parietalls; obliteration of chorionic and uterine cavities; function of fused foetal membranes to dilate cervical canal.

12. Abnormalities; obliteration of chorionic and uterine cavities; abnormalities of chorion.

13. Formation of twins and types of twins.

14. Arrangement of foetal membranes. Conjoined twins.

Teratology

15. Genetical and environemntal factors as causative factors for congenital malformations.

16. Mode of actions of teratogenes and critical periods.

II. SYSTEMIC EMBRYOLOGY

1. Development of the individual organs of digestive system, genital system, urinary system, respiratory system, cardiovascular system, nervous system, special sensory organs, endocrine glands and mammary gland.

2. Developmental abnormalities; pathogenesis of the anomalies.

3. Histogenesis of various organs.

4. Development of skeletal system, muscular system and derivatives of coelomic cavities.

5. Development of face and the pharyngeal arches and the associated congenital anomalies.

III. OSTEOLOGY

1. Names of the bones of the body and their position; classification of the bones with examples; general features of the bone and normal development; microscopic anatomy of bone; general pattern of blood supply; ossification of the bones of the limbs for age determination.

2. Process of repair of bone.

IV. MUSCULAR SYSTEM

1. Classification and identification of the muscles of the body: main attachments, nerve supply and action; microscopic anatomy of muscles and the nerve terminations.

2. Details of attachments of the muscles; ultrastructural features of muscle; mechanism of the movement caused by the muscle/muscles and various forces exerted by them.

V. ARTHROLOGY

1. Classification of joints, general features of different types of joints; detailed study of major joints of the limbs and movements.

2. Microscopic anatomy of articular cartilage; maintenance of articular cartilages; blood supply and nerve terminals in the articular cartilage.

VI. CARDIO-VASCULAR SYSTEM

1. Position and parts of the heart; names of the blood vessels and their distribution in the body ; mormal development of heart and major blood vessels of the body.

2. Developmental anomalies; valvular defects and their effects; pathogenesis of the anomalies.

VII. RESPIRATORY SYSTEM AND THE ORGANS

1. Position, parts, relations, blood supply, microscopic anatomy, blood air barrier, normal development.

2. Ultrastructure of pulmonary epithelium.

VIII. DIGESTIVE SYSTEM AND THE ORGANS

1. Position, parts, relations, blood supply, nerve supply, normal development, microscopic anatomy; sphincters of the gastrointestinal system.

2. Sphincteric action and mechanism.

IX. GENITO-URINARY SYSTEM AND THE ORGANS

1. Parts, position, relations, blood supply, nerve supply normal development, and microscopic anatomy.

2. Anatomical basis of Family Planning measures.

3. Electron microscopy of renal glomerulus.

X. ENDOCRINE SYSTEM AND INDIVIDUAL ENDOCRINE GLANDS

1. Organs, location, relations, blood supply, nerve supply, microscopic anatomy and normal development

2. Clinical manifestations of common endocrine disorders.

XI. NERVOUS SYSTEM AND ITS COMPONENTS

1. Parts of nervous system, meninges, nerve terminals, neuroglia, myelination, ventricles, motor and sensory pathways, cranial nerves, functional areas, normal development, microscopic anatomy of neurons, motor and sensory cortex and their blood supply.

2. Reticular formation, limbic system, correlation of microscopic anatomy with function, developmental anomalies, anatomical basis of common neurological disorders.

XII. SPECIAL SENSORY ORGANS

1. Gross and Micro Anatomy of eyeball, ear, nose, skin and tongue.

XIII. LYMPHATIC SYSTEM

1. Gross anatomy of the major groups of the lymphnodes of the body and their drainage areas. Gross anatomy of the major lymphatics specially thoracic duct and its tributaries.

XIV. HUMAN GENETICS

1. Nucleus, DNA, chromosomes, classification, karyotype, chromosomal aberrations (Klinefelter and Turner syndrome) and their Prenatal diagnosis.

2. Pedigree chart. Pathogenesis of chromosomal aberrations and their effects, recombinant DNA, genetic inheritance, genetic counselling, inborn errors of metabolism.

XV. MICRO ANATOMY

1. General Histology. Study of the basic tissues of the body. Functional correlation of the structural components of the organs.

XVI. POSTNATAL GROWTH AND DEVELOPMENT

1. Meaning of the terms like growth, development ; principles of growth and development; types of postnatal growth, periods of growth and development and factors influencing them. Assessment of growth and development.

2. Milestones of deveopment, growth and development during adolescnece.

XVII. RADIOLOGICAL ANATOMY

1. Identification of normal anatomical features in skiagrams, including special radiological investigations (Barium meals, IVP, CT scan, Ultrasound, Hystosalpingography and cholecystography).

XVIII. SURFACE ANATOMY

1. Surface features of the body and projection of the outline of heart, lungs, pleura, liver, kidneys and important blood vessels and nerves.

XIX. CROSS SECTIONAL ANATOMY

1. Cross sections of thorax, abdomen and pelvis to understand the interelations of organs.

PRACTICALS

GROSS ANATOMY :

Upper Limb: Dissection: Pectoral and scapular regions, axilla and shoulder region, arm, forearm.

Prosected parts: Joints, Palm and dorsum of hand.

Thorax: Dissection: Chest wall, Mediastinum, lungs and heart.

Abdomen: Dissection: Anterior abdominal wall and inguinal region. Viscera and Posterior Abdominal wall.

Pelvis: Dissection: Pelvic viscera and blood vessels.

Prosected Parts: Perineum including ischio-rectal fossa.

Lower limb: Dissection: Gluteal region, front and back of popliteal fossa and leg.

Prosected Parts: Sole of the foot and joints.

Head & Neck: Dissection: Superficial and deep dissection of face and neck, orbit and eye ball. Submandibular region.

Prosected parts: Temporal and infratemporal fossa, cranial cavity, naso and oropharyngeal regions. Ear, larynx and pharynx.

NERVOUS SYSTEM:

Sections of brain and prosected specimens to demonstrate visual system, auditory and vesibular pathways and major functional areas.

DEMONSTRATIONS:

- Bones
- Brain and spinal cord
- Cross-sectional anatomy
- Radiological Anatomy
- CT and MRI scan.

MICROSCOPIC ANATOMY:

Stained slides of all the tissues and organs.

Electronmicrographs to demonstrate filtration barrier of kidney, alveolar septum, tight junctions of capillaries and such relevant areas.

DEVELOPMENTAL ANATOMY:

- Models to demonstrate various stages of early foetus and different organs development.
- Slides of ovary and tests to show follicles and stages of maturation of spermatozoa; and early chick and pig embryo.

GENETICS:

Demonstration of normal karyotype and common abnormal conditions including banding; Pedigree chart.

SKILLS

1. Demonstrate surface markings of important organs.
2. Localise important pulsations and the structures against which pressure can be applied in case of bleeding from a particular artery.
3. Elicit superficial and deep reflexes.
4. Demonstrate muscle testing and movements at joints.
5. Locate sites for: Lumbar puncture, sternal puncture, pericardial tapping, liver biopsy.
6. Locate veins for venae puncture.
7. Locate the site for emergency tracheostomy.
8. Locate the subcutaneous positions of large nerves.

AREAS FOR INTEGRATED TEACHING

S.No.	Area/subject	Department/s to be involved
1.	Anatomical basis of birth control measures	Obstetrics and Gynaecology; and Surgery
2.	Postnatal growth and development	Pediatrics and Community Medicine.
3.	Antenatal growth and development	Obstetrics and Gyanecology.
4.	Genetic disorders	Various clinical departments.
5.	Neuro-Anatomy	Physiology and Medicine
6.	Kinesiology - movements at various joints.	Orthopedics
7.	Embryological basis of important and common congenital anomalies.	Pediatries, Obst. and Gynaecology.

PHYSIOLOGY

Departmental Objectives :

At the end of the course, the student will be able to:

Describe the normal functions of all the organ systems, regulatory mechanisms and interactions of the various organs for well-coordinated total body function.

Assess the relative contribution of each organ system and the principles in the maintenance of the milieu interieur (homeostasis).

Elucidate the physiological aspects of normal growth and development.

Analyse the physiological responses and adaptation to environmental stresses.

Comprehend the physiological principles underlying pathogenesis and treatment of disease.

Correlate knowledge of physiology of human reproductive system in relation to National Family Welfare Programme.

Course Contents

I. GENERAL PHYSIOLOGY

1. Homeostasis, concepts of physiological norms, range and variations, active and passive transports, Relationship between stimulus and response.

2. Structure of cell membrane, resting membrane potentials, cellular receptors, intercellular communications.

3. Physico-chemical properties of cell membrane. Cell inclusions, their functions.

II. BODY FLUIDS, BLOOD

1. Blood Composition, principles of estimation, functions of plasma proteins, cellular elements of blood, their formation and regulation, haemoglobin and functions, jaundice, anaemias and their classification, haemostatic mechanisms, anticoagulants, blood groups, Rh incompatibility, blood transfusion; ESR; Basic mechanisms of immunity with respect to lymphocytes and functions of WBCs. Lymph.

2. Changes in body fluids in disease; Hypoproteinaemia; oedema. Replacement of body fluid loss. Effects of lymphatic obstruction. Functions of thymus, Structure of immunoglobulins, Autoimmunity, AIDS.

III. NERVE AND MUSCLE

1. Classification; electrical, mechanical properties. Mechanism of muscle contraction and its molecular basis. Neuromuscular transmission, thermal changes, oxygen debt, mechanical efficiency. Smooth muscle, electrical and mechanical properties, nerve supply, neuro-transmitters.

2. Effects of denervation on muscle, neuromuscular disorders, investigations for nerve and muscle disorders, details of chemical changes in muscle contraction.

IV. GASTROINTESTINAL TRACT

1. Functional morphology, functions, regulation of secretion of salivary glands, stomach, small intestine and large intestine; regulation of gastrointestinal movements; functions of gall bladder, liver; site of production and action of G.I. hormones; physiological basis of investigating disorders of secretion and motility.

2. Effects of disorders of secretion and motility. Physiological basis of peptic ulcer and achalasia; motility disorders; liver function tests; diarrhoea and its treatment.

V. KIDNEY

1. Functions of different parts of nephron in urine formation. Role of kidney in water and electrolyte balance. Acidification of urine, diuresis, kidney function tests. Juxtaglomerular apparatus; Renin-Angiotensin system. Renal blood flow. Structure and innervation of bladder; micturition, cystometrogram.

2. Mechanism of action of diuretics, renal failure, principles of artificial kidney, disorders of micturition.

VI. SKIN AND BODY TEMPERATURE (ENVIRONMENT)

1. Functional morphology, heat gain and loss mechanisms, role of skin in temperature regulation. Body temperature, Normal values and variations. Hyperthermia, fever, heat stroke, cold injury.

VII. ENDOCRINE GLANDS

(To be integrated with Biochemistry)

1. General principles of regulation of endocrine glands. Hormones, functions, regulation of secretion. Experimental and clinical disorders of anterior and posterior pituitary, thyroid, parathyroid, adrenal cortex, adrenal medulla and endocrine pancreas. Stress and hormones. Physiology of growth.

2. Synthesis and transport of hormones, receptors and blockers. Functions of local hormones; pineal; cellular mechanism of hormonal action, investigation.

VIII. REPRODUCTION

Male Reproduction

1. Regulation and functions of testis, constituents of semen, ejaculation, testicular hormones, puberty.

2. Abnormalities of testicular function, sex determination and differentiation.

Female Reproduction

1. Menstrual cycle; changes in ovary, uterus, cervical mucus, vagina and hormonal regulation. Ovulation and its detection, fertilisation, implantation, physiological changes during pregnancy, parturition, placenta, physiology of lactation, menopause.

2. Foetoplacental unit, composition of milk, colostrum, nutritional needs of mother and child during pregnancy and lactation, investigations for infertility.

Family Planning and Welfare

1. Physiological basis of contraception in males and females, principles of use of oral contraceptives, safe period rhythm and other methods of contraception.

IX. CARDIOVASCULAR SYSTEM

1. Functional anatomy of heart, properties of cardiac muscle; electrical and mechanical changes in cardiac cycle, normal ECG. Cardiac output; measurement in man, physiological variations. Regulatory mechanisms of heart rate and blood pressure. Regional circulations: normal values, measurement and regulation of coronary, cerebral, skin and foetal. Changes in CVS during muscular exercise, postural changes, gravitational forces, hypovolemia, hypoxia and cardiopulmonary resuscitation.

2. Principles of electrocardiography and cardiac catheterisation. Arrhythmias, pathophysiology of cardiac failure, hypertension, valvular disorders.

X. RESPIRATORY SYSTEM

1. Functional anatomy of respiratory system. Mechanics of normal respiration. Lung compliance, alveolar ventilation, ventilation perfusion ratio, oxygen and carbon dioxide transport, Diffusing capacity, Pulmonary function tests, Regulation of respiration, respiratory acidosis and alkalosis, pulmonary blood flow. Hypoxia, cyanosis, asphyxia. Respiratory adjustments during muscular exercise, hyperbaric conditions, principles of oxygen therapy, artificial respiration.

2. Hyaline membrane disease. Pathophysiology of obstructive and restrictive disorders. Pulmonary oedema, decompression sickness, hyperbaric oxygen therapy, dyspnoea.

XI. CENTRAL NERVOUS SYSTEM

1. Organization of the central nervous system. Functions and neuronal organization at spinal cord level. Synaptic transmission. Motor and sensory systems and their lesions. Reticular system in brain stem, sleep, wakefulness, EEG waves and physiological changes in EEG. Clinical lesions and experimental sections at spinal cord, brain stem and sub-cortical levels. Physiology of basal ganglia, cerebellum, thalamus, hypothalamus, limbic system, prefrontal lobe and cerebral cortex. Speech and its disorders. Autonomic nervous system. Formation and functions of CSF. Blood brain barrier. Central Neurotransmitters.

2. Evoked potentials. Imaging techniques. Neuroglia. Physiological basis of CNS disorders like Alzheimer's disease, Parkinsonism, Syringomyelia, Tabes dorsalis.

XII. SPECIAL SENSES

Eye

1. Image formation on retina. Errors of refraction, functions of aqueous humour, intra-ocular tension. Mechanisms of accommodation, dark adaptation, pupillary reflexes, functions of retina. Role of visual cortex in perception. optic pathway and lesions. Field of vision. Colour vision.

2. Structure of photoreceptors, generator potentials of rods and cones, electroretinogram.

Auditory Apparatus

1. Functions of tympanic membrane, middle ear, cochlea, auditory receptors and pathway. Deafness and its causes.

2. Audiometry, theories of hearing.

Vestibular Apparatus

1. Division, functions, connections and lesions. Vestibuloocular function, nystagmus.

2. Tests of vestibular functions, mechanism of habituation.

Taste and Smell

1. Receptor, pathways and cortical and limbic areas associated with taste and smell.

2. Disorders of taste and smell perception.

PRACTICALS

The following list of experiments and demonstrations is not exhaustive. Additional experiments can be included as and when feasible and required.

I. HAEMATOLOGY

1. Preparation and staining of blood films; identification of blood cells in a stained film; total and differential leucocyte count; estimation of haemoglobin; fragility of red blood cell; erythrocyte sedimentation rate, haematocrit value; blood grouping; bleeding and clotting time.

2. Laboratory classification of anaemias and determination of absolute indices like MCH, MCHC, MCV, colour index.

3. Methods of blood collection; Arneth count; enumeration of reticulocyte and platelets (demonstration); viscocity of blood (demonstration); blood volume estimation (demonstration); bone marrow smear (demonstration).

II. NEURO-MUSCULAR PHYSIOLOGY

Human

1. Mosso's ergography; effects of prolonged voluntary activity, rest, motivation, fatigue on human muscle contractions and calculation of work done; bicycle ergometry and treadmill, mechanical efficiency of human body.

2. Demonstration of electromyography; velocity of nerve impulse and strength duration curve in humans (demonstration); compound action potential (demonstration).

Experimental

1. Study of laboratory appliances in experimental physiology. Frog's gastrocnemius - sciatic muscle nerve preparation; simple muscle curve; effects of increasing strength of stimuli; effects of temperature; genesis of fatigue; effects of two successive stimuli; genesis of tetanus; effect of afterload and free load on muscle contraction and calculation of work done; velocity of nerve impulse in sciatic nerve of the frog; isometric contraction and determination of resting length.

Smooth Muscle

1. Recording of contraction of frog's rectum; recording of movements of small intestine (rabbit) and effects of ions, drugs, temperature.

III. METABOLISM, BODY TEMPERATURE AND KIDNEY

1. Recording of body temperature and effects of exercise on body temperature.

2. Basal metabolic rate in humans; water excretion test.

IV. ENDOCRINES AND REPRODUCTIVE SYSTEM

1. Demonstration of vaginal smears of rats; identification of the phases of the estrus cycle; pregnancy diagnostic tests; effects of adrenaline, posterior pituitary extract on uterine muscle; examination of semen - sperm count, sperm motility (demonstration); Demonstration of slides showing the proliferative and secretory changes in the endometrium.

V. CARDI0VASCULAR SYSTEM

1. Clinical examination of cardiovascular system. sphygmomanometry: effect of exercise and posture on blood pressure, radial pulse, cold-pressor test. Electrocardiography.

2. Experimental cardiogram: effect of warmth and cold on sinus venosus and ventricle; extra systole and compensatory pause; properties of cardiac muscle effect of acetylcholine, adrenaline, nicotine and atropine on frog heart; perfusuion of blood vessels of frog; perfusion of mammalian heart and effect of drugs on it; perfusion of frog's heart and effect of ions on it.

3. Demonstration : Echocardiography; cardiac output in dogs; record of blood pressure, venous pressure, respiration in animals (dog) and effects of various factors on it; phonocardiogram; effect of passive tilt on B.P.; effect of exercise on hemo-cardio-respiratory system; Cardiac function tests; Cutaneous circulation in man.

VI. RESPIRATORY SYSTEM

1. Pulmonary function tests including spirometry; clinical examinations of respiratory system; stethography; cardiopulmonary resuscitation; respiratory response to exercise.

2. Demonstrations: Compliance and surfactant; Donder's model to demonstrate the mechanism of respiration; Dog/cat: intrapleural and intraoesophageal pressures and the effect of various influences on them; Muller's manoeuver; Collection and analysis of respiratory gases; uses of Douglas bag.

VII. NERVOUS SYSTEM

1. Examination of motor functions, sensory functions and cranial nerves; examination of reflexes of normal subject.

2. EEG, EMG and nerve conduction studies : sensory and motor, compound action potential: decerebrate rigidity in cat: reaction time; spinal frog and reciprocal innervation; decerebrate frog; examination of autonomic functions.

VIII. SPECIAL SENSES

1. Perimetry, acuity of vision-distant and near; colour vision; tests on smell and taste; tuning fork tests.

2. Principles of ophthalmoscopy and retinoscopy; audiometry; Purkinje-Samson images.

Skills

1. Perform experiments designed for study of physiological phenomena.

2. Interpret experimental/investigative data.

3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

LIST OF TOPICS FOR INTEGRATED TEACHING

1. Endocrine glands : Biochemistry and Medicine

2. Family Planning and Welfare : Anatomy and Obstetrics and Gynaecology.

3. Echocardiography : Cardiology.

4. Basic Life support : Anaesthesiology and Anatomy.

5. Patho Physiology of hypertension - Medicine.

6. Clinical Neurology medicine.

7. Intraocular tension and retinoscopy : Ophthalmology.

8. Audiometry and vestibular tests : Oto-rhino-laryngology.

BIOCHEMISTRY

Departmental Objectives :

At the end of the course, the student should be able to:

Describe the molecular and functional organization of a cell.

Delineate structure, function and interrelationships of biomolecules and consequences of deviation from normal.

Summarize the basic and clinical aspects of enzymology and regulation of enzymatic activity.

Describe digestion and assimilation of nutrients and consequences of malnutrition.

Integrate the various aspects of metabolism, and their regualatory pathways.

Describe mechanisms involved in maintenance of body fluid and pH homeostatsis,

Explain the biochemical basis of inherited disorders with their associated sequelae.

Outline the molecular mechanisms of gene expression and regulation, principles of genetic engineering and their application in medicine.

Summarize the molecular concepts of body defence and their application in medicine.

Identify the principles of conventional and specialized laboratory investigations and instrumentation; analysis and interpretation of a given data; the ability to suggest experiments to support theoretical concepts and clinical diagnosis.

Course Contents

I. EUKARYOTIC CELL STRUCTURE

1. Cellular compartments; environment, organization and composition of cells; functional role of cellular organelles and membranes.

II. CARBOHYDRATE CHEMISTRY

1. Definition, classification and nomenclature of mono, di and polysaccharides. Structure of carbohydrates including heteropolysaccharides and glycoproteins.

2. Sialic acids and blood group substances.

III. LIPID CHEMISTRY

1. Definition, classification, nomenclature, biological importance and properties of lipids. Structure and functions of biological membrane, liposomes.

IV. PROTEIN CHEMISTRY

1. Definition, classification and structure of proteins and aminoacids; their classification and properties.

V. STRUCTURE-FUNCTION RELATIONSHIP OF PROTEINS

1. Oxygen transport proteins: Structure and structural basis of physiological functions. Modification of Hemoglobin structure and diseases.

2. Lipoproteins: Structural characteristics, classification and biological importance.

3. Enzymes: key concepts, mechanism of action, regulation of enzyme activity and their importance in health and disease.

4. Vitamins: Definition, classification, occurence, sources, daily requirements, functions, deficiency manifestation of fat soluble and water soluble vitamins. Antivitamins and hypervitaminosis.

5. Collagen structure and function. Isolation of enzymes, lipid peroxidation and overview of antioxidants.

VI. NUCLEIC ACIDS

1. Definition, structural description and functions; transcription of genetic information, translation of genetic code, regulation of genetic expression and protein synthesis.

2. Genetic engineering and its importance, DNA damage and repair, gene therapy.

VII. DIGESTION AND ABSORPTION

1. Mechanism of digestion and absorption of carbohydrates, lipids, proteins and aminoacids and factors influencing digestion and absorption. Role of dietary fibre.

2. Alterations in the mechanism of digestion and absorption.

VIII. INTRODUCTION TO INTERMEDIARY METABOLISM

1. Biological oxidation and generation of energy.

2. Carbohydrates: Metabolism of glucose and glycogen. Interconversion of hexoses, metabolism of fructose and galactose, blood glucose homeostasis, overview of common disorders of carbohydrate metabolism and their clinical significance.

3. Lipids: Metabolism of fats, biosynthesis of fatty acids, triglycerides and phospholipids; oxidation of fatty acids, cholesterol homeostasis, lipoprotein metabolism.

4. Proteins and aminoacids: General catabolism of amino acids; ammonia metabolism. Formation and biological significance of glycine, tryptophan, tyrosine, phenylalanine, histidine, sulphur containing aminoacids. Common inborn errors of aminoacid metabolism.

5. Biosynthesis and degradation of purine and pyrimidine nucleotides and gout.

6. Minerals: metabolism.

7. Energy and nutrition: Calorie requirements, specific dynamic action, BMR; balanced and adequate diet.

8. Outline of detoxication mechanisms in the human body.

9. Acid base balance, blood buffers, regulation of blood PH.

10. Breakdown of hemoglobin, biochemical basis of jaundice, classification and their importance; bile pigments and their importance; overview of biochemical basis of porphyrins.

11. Methods of investigations of intermediary metabolism; phospholipids, lipoproteins, prostaglandins, leucotriene and thromboxanes. Rare disorders related to lipid metabolism and inherited disorders related to aminoacid metabolism. Purine salvage pathways, secondary hyperuricemia, metabolism of chromium, cobalt, selenium and toxicity manifestation. Basic concepts of total parenteral nutrition.

IX. ORGAN FUNCTION TESTS

1. Thyroid, Liver, Stomach, Kidney.

X. ENDOCRINOLOGY

1. Mechanism of action and biochemical functions of insulin, steroids, thyroxine.

2. Biochemical tests of fetal maturity.

XI. IMMUNOLOGY

1. Structure and biochemical function of immune system, characteristics of humoral and cell-mediated immune response, complement system, immunoregulation and application of the immunological techniques.

2. Immunodiagnostic methods.

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PRACTICALS

1. Spectroscopic examination of hemoglobin and derivatives.

2. Qualitative analysis of gastric juice and bile; principles of Vandenberg test. Interpretation of gastric analysis with correlation to diseases.

3. Milk : qualitative analysis.

4. Qualitative analysis of normal and abnormal constituents of urine and interpretation of results of such analysis.

5. Principles of colorimetry.

6. Principles of estimation of glucose, urea, creatinine, proteins, bilirubins, calcium, cholesterol and uric acid in blood and interpretation of results.

7. Principles of estimation of urea, creatinine in urine and the interpretation of results.

8. Principles of chromatographic and electrophoretic techniques and interpretation of a chromatogram and electrophoretic pattern of serum proteins.

9. Analysis of clinically important enzymes : Alkaline phophatase, SGOT, SGPT and amylase.

SKILLS

1. Use conventional techniques and instruments to perform biochemical analysis relevant to clinical screening and diagnosis.

2. Analyze and interpret investigative data.

PATHOLOGY

Departmental Objectives :

A MBBS student at the end of training in Pathology will be able to:

Understand the concepts of cell injury and changes produced thereby in different tissues and organs and the body's capacity for healing.

Understand the normal homeostatic mechanisms, the derangements of these mechanism and the effects on human systems.

Understand the etiopathogenesis, the pathological effects and the clinico-pathological correlation of common infectious and non-infectious diseases.

Understand the concept of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.

Correlate normal and altered morphology (gross and microscopic) of different organ systems in different diseases to the extent needed for understanding of disease processes and their clinical significance.

Have a knowledge of common immunological disorders and their resultant effects on the human body.

Have an understanding of the common haematological disorders and the investigations necessary to diagnose them and determine their prognosis.

Perform and interpret in a proper manner the basic clinico-pathological procedures.

Know the principles of collection, handling and despatch of clinical samples from patients in a proper manner.

Course Contents

General Pathology

I. CELL INJURY

1. Cell injury : Causes and Mechanism: Ischemic, Toxic.

2. Reversible cell injury : Types, Morphology: Swelling, vacuolation, hyaline, fatty change.

3. Irreversible cell injury : Types of Necrosis.

4. Calcification : Dystrophic and Metastatic.

5. Extracellular accumulations : Amyloidosis; classification, pathogenesis, Morphology.

II. INFLAMMATION AND REPAIR

1. Acute inflammation : Features, causes, vascular & cellular events

2. Morphologic variants of acute inflammation.

3. Inflammatory cells and Mediators.

4. Chronic inflammation : Causes, types, nonspecific and granulomatous with examples.

5. Wound healing by primary and secondary union, factors promoting and delaying the process.

6. Healing at specific sites including Bone healing.

III. IMMUNOPATHOLOGY

1. Immune system : organization, cells, antibodies and regulation of immune responses.

2. Hypersensitivity : types and examples, Antibody and cell mediated tissue injury with examples.

3. Secondary Immunodeficiency including HIV Infection.

4. Auto-immune disorders like systemic lupus erythematosus.

5. Primary immunodeficiency.

6. Autoimmune diseases : organ specific and non-organ specific such as polyarteritis nodosa, Hashimoto's disease.

7. Tumor Immunity.

8. Organ transplantation : Immunologic basis of Rejection and Graft versus Host reaction.

IV. INFECTIOUS DISEASES

1. Mycobacterial Diseases : Tuberculosis and leprosy.

2. Bacterial diseases : Pyogenic, Typhoid, Diphtheria, Gram negative infection, Bacillary dysentry, Syphilis.

3. Viral : Polio, Herpes, Rabies, Measles; Rickettsial, Chlamydial infection.

4. Fungal diseases and opportunistic infections.

5. Parasitic Diseases : Malaria, Filaria, Amebiasis, Kala-azar, Cysticercosis, Hydatid.

6. AIDS : Aetiology, modes of transmission, diagnostic procedures and handling of infected material and health education.

V. CIRCULATORY DISTURBANCES

1. Edema : Pathogenesis and types.

2. Chronic venous congestion : Lung, Liver, Spleen.

3. Thrombosis and Embolism : Formation, Fate and Effects.

4. Infarction : Types, Common sites, Gangrene.

5. Shock : Pathogenesis, Types, Morphologic changes.

VI. GROWTH DISTURBANCES

1. Atrophy, Hypertrophy, Hyperplasia, Hypoplasia, Metaplasia, Malformation, Agenesis, Dysplasia.

2. Neoplasia : Classification, Histogenesis, Biologic Behaviour : Benign and Malignant ; Carcinoma and Sarcoma.

3. Malignant Neoplasia : Grades and Stages, Local & distant spread.

4. Carcinogenesis : Environmental carcinogens, chemical, viral, occupational. Heredity and cellular oncogenes.

5. Tumour and Host Interactions : Systemic effects including paraneoplastic syndromes, Tumor immunology.

6. Laboratory diagnosis : Cytology, Biopsy, Tumor markers.

7. Tumors and Tumor like conditions of soft tissues.

VII. MISCELLANEOUS DISORDERS

1. Autosomal and sex-linked disorders with examples

2. Protein energy malnutrition and vitamin deficiency disorders.

3. Radiation Injury.

4. Disorders of Pigment and Mineral metabolism such as bilirubin, melanin, hemosiderin.

Systemic Pathology

VIII. HEMATOPATHOLOGY

1. Constituents of blood and bone marrow, Regulation of hematopoiesis.

2. Anaemia : classification and clinical features.

3. Nutritional anaemias : Iron deficiency anaemia, Folic Acid/Vit B 12 deficiency anaemia including Pernicious anaemia.

4. Hemolytic Anaemias : Classification and Investigations.

5. Hereditary hemolytic anaemias : Thalassemia, Sickle cell anaemia.

6. Acquired hemolytic anaemias.

7. Aplastic Anaemia.

8. Hemostatic disorders : platelet deficiency; ITP, Drug induced, secondary.

9. Coagulopathies : Coagulation factor deficiency, hemophilia, DIC & anticoagulant control.

10. Leukocytic disorders : Leukocytosis, leukopenia, Leukemoid reaction.

11. Acute and chronic Leukemia : Classification, Diagnosis.

12. Multiple myeloma and dysproteinemias.

13. Blood transfusion : grouping and cross matching, untoward reactions, transmissible infections including HIV and hepatits.

14. Hemolytic Anaemias : Autoimmune, Alloimmune, Drug induced, Microangiopathic and Malaria.

15. Hereditary hemolytic Anaemias : Hereditary spherocytosis, G-6-PD deficiency.

16. Myelodysplastic syndrome.

17. Myeloproliferative disorders : Polycythemia, Myelofibrosis.

IX. CARDIOVASCULAR PATHOLOGY

1. Rheumatic Heart Disease : Pathogenesis and Morphology.

2. Infective Endocarditis : Causes and Pathogenesis.

3. Atherosclerosis and Ischemic Heart Disease; Myocardial Infarction.

4. Hypertension and hypertensive Heart Disease.

5. Congenital Heart Disease : ASD, VSD, Fallot's, Bicuspid aortic, PDA.

6. Pericarditis.

7. Cardiomyopathy.

X. RESPIRATORY PATHOLOGY

1. Inflammatory diseases of bronchi : chronic bronchitis, bronchial asthma, bronchiectasis.

2. Pneumonias : Lobar, Broncho, Interstitial.

3. Lung abscess : Etiopathogenesis and Morphology.

4. Pulmonary Tuberculosis : Primary and Secondary, Morphologic types including pleuritis.

5. Emphysema : Types, Pathogenesis.

6. Tumors : Benign; Carcinoid. Malignant; Squamous cell, Oat Cell, Adeno, etiopathogenesis.

7. Structure of Bronchial tree and alveolar walls, normal and altered lung function; concept of obstructive and restrictive lung disorders.

8. Tumours Nasopharynx and larynx.

9. Occupational lung disorders : anthracosis, silicosis, asbestosis, mesothelioma.

10. Atelectasis and Hyaline Membrane Disease.

XI. URINARY TRACT PATHOLOGY

1. Renal structure, basis of impaired function, urine analysis.

2. Glomerulonephritis : Classification, Primary Proliferative and Non Proliferative.

3. Nephrotic Syndrome.

4. Secondary Glomerulonephritis : SLE, Purpura, Polyarteritis, Amyloidosis, Diabetes.

5. Acute Renal Failure : Acute tubular and cortical necrosis.

6. Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis.

7. Renal tumors : Renal cell carcinoma, Nephroblastoma.

8. Urinary bladder : cystitis, carcinoma.

9. Progressive renal failure and end stage renal disease

10. Renal vascular disorders, kidney changes in Hypertension.

11. Urinary Tract Tuberculosis.

12. Nephrolithiasis and Obstructive Nephropathy.

13. Renal Malformations : Polycystic kidneys.

XII. PATHOLOGY OF THE GASTRO-INTESTINAL TRACT

1. Oral Pathology : Leukoplakia; Carcinoma oral Cavity and Esophagus.

2. Peptic ulcer : etipathogenesis & complications; gastritis: types.

3. Tumors of stomach : Benign; Polyp, Leiomyoma. Malignant; Adenocarcinoma, Lymphoma.

4. Inflammatory diseases of small intestine : Typhoid, Tuberculosis, Crohn's, Appendictis.

5. Inflammatory diseases of large intestine : Amoebic colitis, Bacillary dysentery, Ulcerative Colitis.

6. Tumours and Tumor like condition of the large and small intestine : Polyps, Carcinoid, Carcinoma, Lymphoma.

7. Pancreatitis

8. Salivary gland tumors : Mixed, Adenoid cystic, warthin's.

9. Ischemic and Pseudomembranous enterocolitis, diverticulosis.

10. Malabsorption : Celiac disease, Tropical sprue and other causes.

11. Pancreatic tumors : Endocrine, Exocrine & periampullary.

XIII. LIVER AND BILIARY TRACT PATHOLOGY

1. Jaundice : Types, Pathogenesis and Differentiation.

2. Hepatitis : Acute and Chronic, Etiology, Pathogenesis and Pathology.

3. Cirrhosis : Etiology, Postnecrotic, Alcoholic, Metabolic, Indian childhood, Pathology, Morphology (Macronodular, Micronodular, Mixed), complications.

4. Portal Hypertension : Types including non-cirrhotic portal fibrosis and Manifestations.

5. Diseases of the gall bladder : Cholecystitis, Cholelithiasis, Carcinoma.

6. Tumors of Liver : Hepatocellular and metastatic carcinoma, tumor markers.

7. Concept of hepatocellular failure.

XIV. LYMPHORETICULAR SYSTEM

1. Lymphadenitis : nonspecific, granulomatous.

2. Hodgkin's and Non-Hodgkin's Lymphomas : Classification, Morphology.

3. Diseases of the spleen : Splenomegaly causes and effects.

4. Thymus : Dysgenesis, Atrophy, Hyperplasia, Neoplasia.

XV. REPRODUCTIVE SYSTEM

1. Diseases of cervix : cervicitis, cervical carcinoma, etiology, types and cytologic diagnosis.

2. Hormonal influences and histological appearances of different phases of menstrual cycle and the abnormalities associated with it.

3. Diseases of uterus : endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smooth muscle tumors.

4. Trophoblastic disease : Hydatidiform mole, Choriocarcinoma.

5. Diseases of the breast : Mastitis, abscess, Fibrocystic disease, Neoplastic lesions : Fibroadenoma, Carcinoma, Phyllodes tumor.

6. Prostate : Nodular Hyperplasia and Carcinoma.

7. Ovarian and testicular tumors.

8. Carcinoma of penis.

9. Pelvic inflammatory diseases including salpingitis.

10. Genital Tuberculosis.

XVI. OSTEOPATHOLOGY

1. Osteomyelitis : Acute, Chronic, Tuberculous, Mycetoma.

2. Metabolic diseases : Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidism.

3. Tumors : Primary; Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma; Metastatic.

4. Arthritis : Rheumatoid, osteo and tuberculous.

5. Healing of fractures.

XVII. ENDOCRINE PATHOLOGY

1. Diabetes Mellitus : Types, Pathogenesis, pathology.

2. Nonneoplastic lesions of thyroid : Iodine deficiency goitre, autoimmune thyroiditis, thyrotoxicosis, myxedema.

3. Tumors of thyroid - adenoma, Carcinoma : Papillary, Follicular, Medullary, Anaplastic.

4. Adrenal diseases : Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla.

5. Parathyroid hyperplasia and tumours.

6. Pituitary tumors.

XVIII. NEUROPATHOLOGY

1. Inflammatory disorders : Pyogenic and tuberculous meningitis, brain abscess, tuberculoma.

2. CNS tumors - primary : glioma and meningioma (excluding histopathology) and metastatic.

3. Structural Organization, specific cell types, and reaction patterns.

4. CSF and its disturbances: cerebral edema, raised intracrnial pressure.

5. Cerebrovascular diseases : Atherosclerosis, thrombosis, embolism, aneurysm, Hypoxia, Infarction and Hemorrhage.

PRACTICALS

1. Identify and interpret the gross and/or microscopic features of :

a) acute inflammation in organs such as appendix, lungs, meninges.

b) cellular components of chronic and granulomatous inflammation

c) granulation tissue, callus.

d) typhoid, tuberculous and amoebic ulcers in intestine.

e) tuberculosis of lung, lymphnodes, meninges and intestine.

f) rhinosporidiosis, actinomycocis, mycetoma and molluscum contagiosum.

g) amoebic liver abscess, malarial liver and spleen, filarial Lymphadenitis, cysticercosis and hydatid cyst.

h) fatty liver and kidney; amyloidosis of liver, spleen and kidney.

i) types of necrosis : caseous, coagulative, liquefactive, fat.

2. Perform with accuracy and reliability basic haematological procedures such as haemoglobin estimation, total and differential WBC count and blood grouping, peripheral blood smear staining, examination and report.

3. Collect and dispatch clinical samples from patients in a proper manner.

4. Perform a complete examination of the urine and detect any abnormalities.

5. Grouping and cross matching of blood.

6. Perform the basic laboratory haematological tests like bleeding time and clotting time.

7. Interpret tests such as clot retraction, osmotic fragility, prothrombin time.

8. Calculate the indices and interpret the relevant significance.

Skills

1. Interpret abnormal biochemical laboratory values of common diseases.

2. Interpret peripheral smear of common diseases.

3. Adopt universal precautions for self protection against HIV and hepatitis and counsel pateints.

4. Be able to collect and transport materials for various pathological tests including histopathology, cytopathology and biochemistry.

5. Do complete urine examination including microscopy.

6. Do and interpret Hb, TLC, DLC, ESR, PCV, BT, CT and blood smear for parasites and red cell morphology.

7. Do blood grouping and cross matching.

Microbiology

Departmental Objectives :

A MBBS student at the end of the microbiology course will be able to:

Describe the mechanisms of host parasite relationship.

List the normal flora of the human body.

Describe the aetiology and pathogenesis of common infectious diseases.

List the microbes that cause opportunistic infections in humans and describe their pathogenesis.

a. Choose appropriate laboratory investigations required for a clinical diagnosis.
b. Sample the right specimen, at the right time, by the right method.
c. Analyse and interpret the results of laboratory tests.
d. Perform some simple tests which help to arrive at rapid diagnosis.

Apply the principles of immunology in the pathogenesis, diagnosis and prevention of infectious and non-infectious diseases.

Practise the techniques of asepsis, antisepsis and sterilization in day-to -day procedures and apply universal precautions in laboratory and clinical practice.

Organize the prevention and control of communicable diseases in the community or hospital.

Understand the ecology (microbiobial) of specialized areas like hospital, water, food and prevent the possible spread of infections.

Course Contents

I. INTRODUCTION TO MICROBIOLOGY

1. Morbidity and mortality data of infectious diseases prevalent in the country with reference to the National Health Programmes and in the local geographic area.

2. Significant milestones in the history of Microbiology.

II. GENERAL MICROBIOLOGY

1. Definitions : infections, parasite, host, vector, fomite, Contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.

2. Normal flora of the human body.

3. Routes of infection and spread; endogenous and exogenous infections; source and reservoir of infections.

4. Bacterial cell. Morphology limited to recognizing bacteria in clinical samples: Shape, Motility and arrangement. Structures which are virulence associated. Physiology: Essentials of bacterial growth requirements.

5. Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.

6 Antimicrobials : Mode of action, interpretation of susceptibility tests, resistance, spectrum of activity.

7. Bacterial genetics.

III. IMMUNOLOGY

1. Basic principles of immunity. Immunobiology : lymphoid organs and tissues. Antigen and antibody reactions with relevance to pathogenesis and serological diagnosis.

2. Cell mediated immunity and its role in immunity.

3. Immunology of hypersensitivity.

4. Measuring immune functions.

5. Immunological basis of the autoimmune phenomena.

6. Immunodeficiency with relevance to opportunistic infections.

7. Basic principles of transplantation immunity.

8. Basic principles of tumor immunity.

Systematic Microbiology

IV. BACTERIOLOGY

TO BE CONSIDERED UNDER THE FOLLOWING HEADINGS

Morphology, classification according to pathogenicity, mode of transmission, methods of prevention, collection and transport of samples for laboratory diagnosis, Interpretation of laboratory reports , Rapid bedside diagnosis where feasible, list of antimicrobial agents and control measures with special relevance to the National Control and Eradication programmes.

1. Staphylococci.

2. Streptococci and Pneumococci.

3. Neisseria.

4. Corynebacterium diphtheriae.

5. Mycobacteria : M. Tuberculosis, M. leprae, atypical mycobacteria.

6. Enterobacteriaceae.

7. Parvobacteria : Hemophilus, Bordetella, Brucella, Pasteurella, Gardnerella.

8. Vibrios : V.Cholerae and other medically important vibrios.

9. Campylobacters and Helicobacters.

10. Pseudomonas.

11. Bacillus anthracis.

12. Sporing and non-sporing anaerobes; Clostridia, Bacteriodes and Fusobacteria.

13. Chlamydiae : Mycoplasma, Rickettsiae.

14. Actinomycetales : Actinomycetes and Nocardia.

15. Listeria monocytogenes.

V. VIROLOGY : INTRODUCTION

1. General properties : Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections. Immunity and prophylaxis of viral diseases. Principles of laboratory diagnosis of viral diseases. List of commonly used antiviral agents. Bacteriophage with relation to virulence mechanism and epidemiology.

2. Replication and genetics.

VI. SYSTEMATIC VIROLOGY

1. Herpes viruses : List of viruses included, lesions produced, pathogenesis and latency, principles of laboratory diagnosis.

2. Arbo viruses : List of arboviruses prevalent in India, general properties, mode of transmission, disease syndromes produced, common diagnostic tests, prevention of spread.

3. Picorna viruses : Common infections produced, classification and general properties, pathogenesis of poliomyelitis, immunoprophylaxis of poliomyelitis.

4. Myxoviruses : General properties, classification according to diseases produced, antigenic variations in influenza virus with relevance to vaccine efficacy; measles, mumps and rubella : important features and prophylaxis.

5. Rabies virus : General properties, antirabies vaccine, antemortem diagnosis in rabies.

6. Hepatitis virus : List of viruses, pathogenesis, mode of infection, list of diagnostic tests and their interpretation, methods of prevention and control.

7. Human immunodeficiency virus : Structure with relevance to laboratory diagnosis and type of infection, laboratory tests and their interpretation, universal precautions, specific precautions, recent trends in diagnosis and prophylaxis.

8. Rota virus : laboratory diagnosis.

9. Slow virus infection.

10. Poxviruses.

11. Oncogenic viruses.

VII. MYCOLOGY

1. General properties of fungi. Classification based on disease: Superficial, Subcutaneous, deep mycoses, opportunistic infections, systemic mycoses. General principles of fungal diagnosis, Rapid diagnosis. Method of collection of samples. Antifungal agents.

VIII. PARASITOLOGY

Global and National prevalence; control and eradication of parasitic diseases; definition of key terms; brief life cycle with relevance to understanding pathogenesis, prevention, laboratory diagnoses and interpretation.

1. Protozoans:
    i) Intestinal.
    ii) Genital.
    iii) Protozoans in blood.
    iv) Opportunistic protozoans.
2. Helminths:
    i) Cestodes : Taenia, Echinococcus.
3. Nematodes:
    i) Intestinal.
    ii) Tissue.
    iii) Blood.
4. Medical entomology with reference to vectors.
5. Hymenolepis.
6. Trematodes of medical importance.

IX. CLINICAL / APPLIED MICROBIOLOGY

Desirable to have integrated teaching.

1. Streptococcal infections : Rheumatic fever and Rheumatic heart disease.
2. Meningitis.
3. Tuberculosis.
4. Enteric fever.

5. Dysentery.
6. Diarrhoeal diseases.
7. Pyrexia of unknown origin.
8. Eye infections.
9. Leprosy.
10. Sexually transmitted diseases.
11. Poliomyelitis.
12. Hepatitis.
13. Acute respiratory infection.
14. Central Nervous System infections.
15. Urinary tract infections.
16. Pelvic inflammatory disease.
17. Wound infection.
18. Opportunistic infection.
19. HIV infection.
20. Malaria.
21. Filariasis.
22. Zoonotic diseases.
23. Bone and joint infections.
24. Food poisoning.
25. Exanthematous conditions.

Skills

1. Do stool exam for ova and cysts; and hanging drop for vibrio cholerae.

2. Do and examine a wet film of vaginal smear for Trichomonas and fungus.

3. Perform and interpret Gram's stain, Albert's stain, and Ziehl - Nielsen or modified Ziehl Nielsen's stain.

4. Perform skin scrapings and do a KOH preparation for fungus infections.

5. Do cell counts and gram stain of CSF and other body fluids.

6. Interpret blood smear for parasites like malaria and filaria.

7. Interpret antimicrobial sensitivity reports.

8. Interpret serological tests such as VDRL, ASLO, Widal, HIV, Rheumatoid factor, Hepatitis and Torch infections.

9. Be able to collect and transport following clinical samples for microbiological tests: Blood, pus, urine, CSF, body fluids, stool, sputum, throat swabs and serum.

10. Adopt universal precautions for self protection against HIV and hepatitis.

PHARMACOLOGY

Departmental Objectives :

The student after completing the course in Pharmacology will be able to:

Understand the general principles of drug action and the handling of drugs by the body.

Select and prescribe suitable drug(s) according to the need of the patient for prevention, diagnosis and treatment of common ailments.

Foresee, recognise, prevent and manage adverse drug effects.

a. Avoid simultaneous use of drugs resulting in harmful interaction(s).

b. Judiciously use rational drug combinations in the best interest of the patient.

Be aware of the contribution of both drug and non-drug factors in the outcome of treatment.

Appreciate the essential drug concept and translate it in terms of drug needs for a given community.

Judiciously use "over the counter" drugs and be aware of ill effects of social use of intoxicants.

Exercise caution in prescribing drug(s) likely to produce dependence and be aware of treatment strategies for drug dependence.

Be aware of the drug treatment guidelines laid down for diseases covered under National Health Programmes.

Prescribe drug(s) for the control of fertility.

Be aware of possible adverse effects of drugs on the foetus while treating pregnant female.

Be aware of the age related factors while prescribing treatment in relation to infant/children/geriatric patients.

Course Contents

I. GENERAL PHARMACOLOGY

1. Definition and scope of Pharmacology and its different branches; routes of administration of drugs : advantages and disadvantages of different routes.

2. General principles of drug action.

3. Basic principles of pharmacokinetics and its relevance to rational therapeutics.

4. Biotransformation of drugs and factors affecting it.

5. Basic mechanisms of drug interactions.

6. Various types of adverse effects that can occur with therapeutic use of drugs. Concept of therapeutic index and margin of safety.

7. Mechanics of drug action; factors modifying drug action and dosage including dose response relationship.

8. Drugs and drug combinations that are banned in India.

9. Clinical Pharmacology : definition, purpose and scope.

10. Molecular mechanisms of drug action.

11. Modern drug delivery systems and principles underlying them.

12. Bioavailability and bioequivalency of drugs.

II. AUTONOMIC NERVOUS SYSTEM

1. General principles of autonomic neurotransmission with reference to cholinergic and adrenergic systems : various types and sub-types of receptors and their agonists and antagonists.

2. Therapeutic indications, common side effects and contraindications of cholinomimetics (including anti-cholinestrases) and cholinergic blocking (antimuscarinic) drugs. Steps in the pharmacotherapy of organophosphorous and atropine poisonings, pharmacotherapy of glaucoma and myaesthenia gravis.

3. Therapeutic indications, common side effects and contraindications of alpha 1, alpha 2, Beta 1 and Beta 2

selective and non-selective adrenoreceptor agonist and antagonists.

4. Molecular and biochemical mechanisms of action of cholinergic drugs, adrenergic drugs and their blockers.

5. Neuromuscular blocking drugs : names, pharmacological actions, side effects and principle use in anesthesiology.

III. CARDIO - VASCULAR SYSTEM

1. a. Pharmacological actions of cardiac glycosides and the basis of their use in congestive heart failure (CHF) and arrhythmias.

   b. Pharmacokinetics, drug interactions, adverse effects and contraindications of digoxin; treatment of digoxin toxicity.

   c. Approaches to the treatment of CHF and the status of diuretics, digitalis and vasodilators in its management.

2. a. Classification of antiarrhythmic drugs. Quinidine: pharmacological actions, adverse effects and indications.

   b. Treatment of paroxysmal supraventricular tachycardia, sudden cardiac arrest and ventricular fibrillation.

3. a. Classification of antihypertensive drugs. Mechanism of action, adverse effects, drug interactions and basis of combining commonly used agents like B blockers, diuretics, ACE inhibitors, calcium channel blockers, clonidine.

   b. Management of hypertensive emergencies.

4. Classification of drugs used in angina pectoris. Nitrates: pharmacological actions, mechanisms of beneficial effect in angina, adverse effects and phenomenon of nitrate tolerance.

5. Calcium channel blockers : Pharmacological actions, adverse effects and indications.

6. Approaches to the treatment of myocardial infarction.

7. Drug treatment of shock and peripheral vascular diseases.

8. Amrinone : Pharmacological actions, adverse effects and indications.

9. Electrophysiological basis of action of antiarrhythmic drugs.

IV. DIURETICS

1. Classification of diuretics : site of action of diuretics of different classes and the pattern of electrolyte excretion under their influence.

2. Short term side effects and long term complications of diuretic therapy.

3. Therapeutic uses of diuretics.

4. Anti diuretics.

5. Diabetes insipidus.

V. DRUGS AFFECTING BLOOD AND BLOOD FORMATION

1. Antianaemic drugs.

   a. Mechanisms of iron absorption from gastrointestinal tract and factors modifying it. Bioavailability, adverse effects and indications of oral and parenteral iron preparations. Treatment of iron deficiency anaemia.

   b. Indications of folic acid, Vit B12 and Vit K.

2. Classification of anticoagulants. Mechanisms of action of heparin and oral anticoagulants, drug interactions with oral anticoagulants and treatment of bleeding due to their overdose.

3. Drugs inhibiting platelet aggregation, their indications and precautions in their use.

4. Properties and indications of plasma expanders.

5. Disadvantages of 'shot gun' anti-anaemia preparations.

6. Names and indications of fibrionolytics and antifibrinolytics.

7. Hypolipoproteinemic drugs : mechanisms of action, adverse effects and indications

VI. AUTACOIDS AND RELATED DRUGS

1. Definition of autacoids and their difference from hormones.

2. Pharmacological actions of the autacoids and their pathophysiological roles.

3. The subtypes of histamine receptors and the actions mediated through each

4. Histamine H1 receptor antagonists : classification, pharmacological actions, adverse effects and therapeutic uses.

5. Angiotensin converting enzyme inhibitors : pharmacological actions, pharmacokinetics, adverse effects,drug interactions and therapeutic uses.

6. Drugs which release histamine in the body and Clinical implications of this property.

7. The sub types of 5 HT receptors and drugs which act by modifying the serotonergic system.

8. Established and potential therapeutic uses of prostaglandins and their analogues.

9. Nature and role of platelet activating factor in disease states.

VII. RESPIRATORY SYSTEM

1. Drugs used in management of asthma, common side effects and precautions to be taken during their use. Principles governing the selection of drugs for asthma.

2. Classification of antitussives based on their mechanism of action, pharmacological actions, indications, contraindications and common side effects of antitussives.

3. Expectorants and mucolytic agents : outline of their mechanisms of action,indications, common side effects and precautions to be taken during their use.

VIII. GASTRO - INTESTINAL TRACT

1. Drugs for peptic ulcer.

a. Drugs used in the treatment of peptic ulcer and outline of pharmacological basis of the use of each.

b. Side effects, contraindications and precautions for the use of the various drugs used in peptic ulcer.

2. Antiemetic drugs and outline of their mechanism of action.

3. Drugs used in diarrhoea.

a. Symptomatic management of diarrhoea giving the pharmacological basis for the use of each drug/measure.

b. Oral rehydration powder.

c. Indications for the use of antimicrobials, antimotility agents and antisecretory drugs.

4. Indications, limitations and hazards of purgatives.

5. Drugs used in therapy of ulcerative colitis outlining the pharmacological basis for the use. Side effects, contraindications and precautions during use of these agents.

IX. ENDOCRINE PHARMACOLOGY

1. Hormones of thyroid : physiological and pharmacological actions, indications, contraindications and common side effects of thyroid hormones used for replacement and for pharmacotherapy. Anti-thyroid drugs: pharmacological actions, adverse effects.

2. Hormones of the islets of Langerhans : Drugs used for pharmacotherapy of diabetes mellitus, their contraindications, precautions during their use and common side effects. Management of iatrogenic hypoglycemia and diabetic ketoacidosis.

3. Sex hormones : synthetic analogues and antagonists, uses in replacement and pharmacotherapy outlining the rationale for such use, Contraindications and common side effects.

4. Pharmacological approaches to contraception, Side effects, precautions during use and contraindications for the various modalities of drug induced contraception.

5. Uterine stimulants and relaxants : their indications, contraindications and important side effects.

6. Hormones of adrenal cortex and their synthetic analogues: pharmacological actions, therapeutic uses, contraindications, precautions during their use and common side effects. General principles governing the pharmacotherapy with glucocorticoids.

7. Hormones and drugs affecting calcium metabolism, their therapeutic indications, contraindications and common side effects.

8. Importance of drug induced alterations in prolactin levels.

X. CENTRAL NERVOUS SYSTEM

1. Drugs used in epilepsy; selection of appropriate drug for the various types of epilepsy and adverse effects of the drugs.

2. Hypnotics used currently in clinical practice with indications, contraindications, adverse effects and drug interactions of benzodiazepines.

3. Opioid and analgesics : pharmacological actions, indications, contraindications and adverse effects of commonly used analgesics.

4. Aspirin like (NSAIDs) drugs, their relative advantages and disadvantages, indications, adverse effects and drug interactions.

5. Drugs used in the treatment of Parkinsonism. Beneficial effects of Levodopa and dopa decarboxylase inhibitors in Parkinsonism, their adverse effects, interactions and limitations.

6. Role of disease modifying agents in the treatment of rheumatoid arthritis.

7. Pharmacological effects of ethanol kinetics and adverse effects and interactions including issues concerning social use of alcohol. Role of ethanol in methanol poisoning.

8. Agents used in the treatment of acute and chronic gout

9. Endogenous opioid peptides and their functions. Opioid receptors and their subtypes.

10. Role of anticholinergics, dopamine agonists and MAO-B inhibitors in Parkinsonism.

XI. PSYCHOPHARMACOLOGY

1. Drugs used for psychosis, anxiety, depression and manic depressive illness.

2. Names of hallucinogens : actions and abuse potential of cannabis indica, cocaine and opoids.

XII. DRUGS IN ANAESTHETIC PRACTICE

1. General Anaesthetics:

   a. Cardinal features of general anaesthesia.

   b. Merits and demerits of commonly used anaesthetic agents.

   c. Properties of thiopentone sodium as an inducing agent and the basis of its short duration of action

d. Complications of general anaesthesia and drug interactions with general anaesthetics.

2. Preanesthetic adjuvants : Names of drugs used in preanaesethetic medication and the purpose of using each of them.

3. Local Anesthetics:

a. The pharmacological basis of local anaesthetic action and of combination of local anaesthetic agents with adrenaline.

b. Common adverse effects of local anaesthetics.

c. Indications for and complications of spinal anaesthesia.

4. Skeletal muscle relaxant:

Pharmacological actions of tubocurarine and succinyl choline, and their uses.

5. Other anaesthetics like ketamine and neurolepticanalgesia.

6. The pharmacology of dantrolene and centrally acting muscle relaxants like diazepam, carisoprodol and baclofen.

XIII. CHEMOTHERAPY

1. General principles of chemotherapy, indications for prophylactic and combined use of chemotherapeutic agents. Common misuses of chemotherapeutic agents. Chemotherapeutic agents in the order of their choice for various infections and infestations, common side effects, contraindications and precautions.

2. Antiseptics and disinfectants and their usesbased on their Pharmacological properties.

3. Anticancer drugs: mechanisms of action, use, Common side effects, contraindications and precautions during use of various anticancer drugs.

4. Chemotherapy of drugs used in tuberculosis, leprosy, malaria, filaria, amoebiasis, Kala-Azar, Enteric fever, worm infestation.

5. Methods to circumvent toxic/side effects of chemotherapeutic agents wherever possible.

6. Chemotherapeutic agents in fungal infections : superficial and systemic.

7. Chemotherapy of viral infections including possible approaches to treatment of viral infections like AIDS.

XIV. TOXICOLOGY

1. General principles of treatment of poisoning.
2. Heavy metal toxicity and heavy metal antagonists.
3. Management of overdosage with commonly used therapeutic agents.

XV. CLINICAL PHARMACOLOGY AND RATIONAL DRUG USE

1. Principles of prescription writing.
2. Prescriptions of common disorders.
3. Essential drug concept.
4. Drugs in children and pregnancy (perinatal pharmacology).
5. Drugs in geriatrics.
6. Drug-drug interactions (with specific examples).
7. Drug resistance.
8. Therapeutic drug monitoring.
9. Clinical use of drugs in hepatic and renal failure.

Skills

1. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

a) Patient,

b) Disease,

c) Socio-economic status,

d) Institutional/governmental guidelines.

2. Identify irrational prescriptions and explain their irrationality.

3. Persuade patients to stick to therapeutic recommendations especially with reference to dosage and duration of therapy and monitor compliance.

4. Warn patients about important side effects of drugs without alarming them.

5. Recognise drug induced untoward effects and take appropriate steps to allay them.

COMMON AREAS FOR INTEGRATED TEACHING OF PHARMACOLOGY

Sl. No.	Area	Collaborating Departments
1.	Drugs in anaesthetic practice	Anaesthesiology
2.	Drug therapy of psychiatric disorders	Psychiatry
3.	Principles of rational use of drugs	Medical, Pediatrics, Surgery, Obst & Gynae.
4.	The concept of essential drugs	Preventive and Social Medicine
5.	Therapy of hypertension	Medicine and Physiology
6.	Therapy of diabetes	Medicine and Physiology
7.	Therapy of peptic ulcer	Medicine, Physiology and Surgery

Forensic Medicine

Departmental Objectives :

At the end of the course in the forensic medicine, the MBBS student will:

Be able to identify, examine and prepare report or certificate in medicolegal cases/situations in accordance with the law of land.

Able to perform medicolegal postmortem and interpret autopsy findings and results of other relevant investigations to logically conclude the cause, manner and time since death.

Be aware of medical ethics, etiquette, duties, rights, medical negligence and legal responsibilities of the physicians towards patient, profession, society, state and humanity at large.

Be aware of relevant legal/court procedures applicable to the medicolegal/medical practice.

Be able to preserve and dispatch specimens in medicolegal/postmortem cases and other concerned materials to the appropriate Government agencies for necessary examination.

Manage medicolegal implications, diagnosis and principles of therapy of common poisons.

Be aware of general principles of analytical, environmental, occupational and preventive aspects of toxicology.

Course Contents

I. FORENSIC MEDICINE

1. Definition of forensic medicine and medical jurisprudence.

2. Courts in India and their powers : Supreme Court, High Court, Sessions Court, Additional Sessions court, Magistrate's Court, Coroner's Court.

3. Court procedures : Summons, conduct money, oath, affirmation, perjury, types of witnesses, types of examination, recording evidence, court questions, conduct of doctor in witness box, medical examiner system.

4. Medical certification and medicolegal reports including dying declaration.

5. Death :

   a. Definition, types: somatic, cellular and brain - death.

   b. Natural and Unnatural death.

   c. Presumption of death and survivorship.

   d. Suspended animation.

6. Changes after death :

   a. Cooling of body, lividity, Rigor mortis, cadaveric spasm, cold stiffening and heat stiffening.

   b. Putrefaction, mummification, adepocere and maceration.

   c. Estimation of time of death.

7. Inquest : Inquest by police, magistrate and coroner.

8. Identification :

   a. Definition, corpus delicti.

   b. Identity of living persons; race, age, sex, religion, complexion, stature.

   c. Identification of criminals, unknown persons, dead bodies and remains of a person by hair, fiber, teeth, anthropometry, dactylography, foot prints, scars, tattoos, poroscopy.

9. Examination of mutilated human remains; Skeletal remains; and exhumation.

10. Medicolegal autopsies :

    a. definition of a medicolegal post mortem.

    b. difference between pathological and medicolegal post mortems.

    c. objectives, procedures, formalities of medicolegal autopsies.

    d. obscure autopsy.

    e. special procedures in suspected poisoning.

11. Mechanical injuries and wounds:

    a. Definition, classification and differentiation of abrasion, contusion, laceration.

    b. Accidents due to vehicles : injuries of primary and secondary impact, crush syndrome, reconstruction of accidents, railway injuries.

    c. Differences between antemortem and postmortem injuries.

    d. Weapons : weapons, dangerous weapons and elementary ballistics.

    e. Wounds due to weapons : Injuries by dangerous weapons, fire arm wounds, blast injuries, stabbing, incised wounds, defence cuts, hesitation cuts, self inflicted injuries, fabricated wounds.

    f. Workman's compensation act.

12. Examination of an injury case :

    a. Differences between accidental, suicidal and homicidal injuries.

    b. Types of injuries : simple, grievous and fatal.

    c. Wound as a cause of death : primary, secondary.

    d. Situation and character of wounds : number, direction, extent, and age of injury.

    e. Injuries of various sites.

Head : Scalp wounds, fracture skull, coup and contracoup injuries.

Intracranial haemorrhage, its location and extent.

Injury to brain, spinal cord, spine, eye; thoracic, abdominal, pelvic viscera; external genitalia; uterus: pregnant and nonpregnant; bones, joints and limbs.

f. Wounds certification.

13. Injuries due to physical agents, and their medicolegal importance : cold, heat, burns, scalds, electricity and lightning.

14. Asphyxial deaths : definition, causes, types, post mortem appearances and medicolegal significance of suffocation, drowning, hanging, throttling and strangulation.

15. Death due to starvation, neglect, battered babies.

16. Dowry deaths.

17. Sexual offences : Virginity : definition and signs; defloration, rape, sodomy, sadism .

18. Legitimacy, paternity, disputed paternity, Medicolegal significance of impotence, sterility and artificial insemination; superfoetation and superfecundation; atavism; sterilization.

19. Pregnancy and delivery : Pregnancy; signs of pregnancy in the living and in the dead. Delivery: signs of recent and remote delivery in the living and in the dead; miscarriage: natural and artificial; therapeutic miscarriage; complications of miscarriage; investigations in deaths due to miscarriage. Medical termination of pregnancy act of 1971.

20. Infanticide : Definition and medicolegal considerations: viability; determination of the age of the foetus; method of demonstration of centres of ossification; rule of Haase, signs of live birth; hydrostatic test. Maceration, post-mortem findings to differentiate a still birth from a live birth. Sudden infant death and cot-death. Precipitate labour.

21. Biological fluids : examination, preservation, despatch and identification of blood stains by microchemical, spectroscopic and precipitation test. Blood groups : medicolegal application; technique of blood grouping. Blood

grouping in disputed paternity; group specific substances; hazards of blood transfusion.

Seminal stains : examination, identification, collection, preservation and dispatch.

22. Sexual offences/perversions : Fetichism, tribadism, masochism, transvestism, voyeurism, bestiality, incest, indecent assault.

23. Brief update on recent advances : HLA typing, DNA typing.

II. FORENSIC PSYCHIATRY

1. Definition, types of mental disorders, lucid interval.

2. Indian lunacy act.

3. Diagnosis of insanity and feigned insanity

4. Testamentary capacity, restraint, insanity with reference to civil and criminal responsibilities, doctrine of diminished responsibility, McNaughten's rule.

III. MEDICAL JURISPRUDENCE

1. Indian Medical Council and State Medical Councils : their functions and disciplinary control.

2. Indian Medical Register, rights and privileges of a registered medical practitioner, penal erasure, infamous conduct, disciplinary committee.

3. Code and law of medical ethics, unethical practices, dichotomy. Consumer protection act.

4. Professional secrets, privileged communication,.

5. Malpractice : civil, criminal and ethical.

6. Consent, negligence, vicarious liability, the doctrine of Bes Ipsa Loquitur, contributory negligence.

7. Duties of a medical practitioner towards his patient and the society.

IV. TOXICOLOGY

1. General aspects of poisoning :

Duties of doctor in cases of poisoning, Medicolegal autopsy in poisoning, preservation and dispatch of viscera for chemical analysis. Role of Forensic Science laboratory. Laws relating to poisons.

2. Types of poison, diagnosis, principles of therapy and medicolegal aspects of :

a. Corrosive poisons; strong mineral acids like Carbolic acid, Oxalic acid.

b. Metallic poisons : Lead, Mercury and Copper.

c. Animal poisons : Snakes and Scorpions.

d. Deliriants : Dhatura, Cannabis and Cocaine.

e. Somniferous agents : Opium, Morphine and Pethidine.

f. Inebriants : Methyl and ethyl alcohol.

g. Gaseous poisons : Carbon monoxide and carbon dioxide.

h. Anaesthetic agents : chloroform and ether.

i. Cardiac poisons : Aconite, Cerebra thevetia and Nerium otorum, Oleander.

j. Miscellaneous : Aspirin, Paracetamol, barbiturates, diazepam and antihistaminics.

k. Insecticides : organophosphorous compounds, endrin, Kerosene, Turpentine.

l. Food poisoning : Botulism.

m. Inorganic non metallic poisons : phosphorous.

n. Metallic poisons : Antimony, Nitrites and Arsenic.

o. Organic vegetable irritants : Abrus, Capsicum, Calotropis, Semicarpus, Croton, Ergot and Ricins.

p. Vegetable Alkaloids.

q. convulsants : strcyhnine.

r. Paralytic agents.

s. War gases and Industrial gases : MIC.

t. Sedatives : Chloral hydrate and Bromides.

u. Mechanical poisons.

Practicals

1. Demonstration of six medicolegal autopsies.
2. Visit to Court.
3. Age estimation from bones, x-rays, dentition.
4. Injuries and weapons.
5. Examination of intoxicated persons.
6. Possible videotape of examination of victim and accused in sexual offences.
7. Specimens of poisons.

Skills

1. Examine and prepare proper certificates in the following medico-legal situations :

    a. injured patient

    b. sexual offences

    c. determination of age

    d. intoxicated patient

2. Prepare proper certificates of birth and death.

3. Prepare dying declaration.

4. Give evidence in a court of law as an expert witness.

5. Collect and do proper labelling, preservation and despatch of medico-legal specimens.

6. Perform, record findings and issue a report for a medico legal autopsy.

7. Diagnose and manage common acute and chronic poisonings.

Community Medicine

Departmental Objectives :

Aim of teaching by the department is directed towards achievement of the goal of "Health for All". Towards this end, by the completion of his training, the M.B.B.S. student be:

Aware of the physical, social, psychological, economic and environmental aspect of health and disease.

Able to apply the clinical skills to recognise and manage common health problems including their physical, emotional and social aspects at the individual and family levels and deal with medical emergencies at the community level.

Able to define and manage the health problems of the community he/she serves. To achieve this, he/she will be able to:

a. Organise elementary epidemiological studies to assess the health problems in the area. For this, he should be able to design a study, collect data, analyse it with statistical tests, make a report and be able to participate in a health information system.

b. Prioritise the most important problems and help formulate a plan of action to manage them under National Health Programme guidelines including population control and family welfare programme. He should be able to assess and allocate resources, implement and evaluate the programmes.

c. Demonstrate knowledge of principles of organising prevention and control of communicable and non-communicable diseases.

d. Organise health care services for special groups like mothers, infants, under-five children and school children.

e. Organise health care in case of calamities.

Able to work as an effective member of the health team.

Able to coordinate with and supervise other members of the health team and maintain liaison with other agencies.

Able to plan and implement health education programmes.

Able to perform administrative functions of health centres.

Able to promote community participation especially in areas of disease control, health education and implementation of national programmes.

Aware of the national priorities and the goals to be achieved to implement primary health care.

Course Contents

I. CONCEPTS IN HEALTH

1. Definition of health; appreciation of health as a relative concept; determinants of health.

2. Characteristics of agent, host and environmental factors in health and disease and the multifactorial etiology of disease.

3. Understanding of various levels of prevention with appropriate examples.

4. Indices used in measurement of health.

5. Health situation in India : demography, mortality and morbidity profile and the existing health facilities in health services.

6. Difficulties in measurement of health.

II. EPIDEMIOLOGY

1. Use of basic epidemiological tools to make a community diagnosis of the health situation in order to formulate appropriate intervention measures.

2. Epidemiology : definition, concept and role in health and disease.

3. Definition of the terms used in describing disease, transmission and control.

4. Natural history of a disease and its application in planning intervention.

5. Modes of transmission and measures for prevention and control of communicable and non-communicable diseases.

6. Principal sources of epidemiological data.

7. Definition, calculation and interpretation of the measures of frequency of diseases and mortality.

8. Common sampling techniques, simple statistical methods for the analysis, interpretation and presentation of data, frequency distribution, measures of central tendency, measures of variability.

9. Need and uses of screening tests.

10. Accuracy and clinical value of diagnostic and screening tests (sensitivity, specificity, predictive values).

11. Planning, collecting, analysing and interpreting data to reach a community diagnosis.

12. Epidemiology of communicable and non-communicable diseases of public health importance and their control.

13. Epidemiologic basis of national health programmes.

14. Awareness of programmes for control of non-communicable diseases.

15. a. Planning and investigation of an epidemic of a communicable disease in a community setting.

b. Institution of control measures and evaluation of the effectiveness of these measures.

16. Various types of epidemiological study designs.

17. The derivation of normal values and the criteria for intervention in case of abnormal values.

18. Planning an intervention programme with community participation based on the community diagnosis.

19. Applications of computers in epidemiology.

III. EPIDEMIOLOGY OF SPECIFIC DISEASES

The specific objectives of selected communicable diseases of public health importance for which National Disease Control/Eradication Programmes have been formulated are described here. For other diseases, the individual teacher would formulate the objectives while drawing the lesson plans. The idea of formulating objectives for a few diseases is to highlight their importance and to emphasise certain learning outcomes.

Poliomyelitis, Infective hepatitis, ARI, T.B., Malaria, Filariasis, STDs & AIDS, Diarrhoeal diseases, Kala Azar, Mental Health, Coronary heart disease, Blindness, Hypertension, Leprosy.

1. Extent of the problem, epidemiology and natural history of the disease.

2. Relative public health importance of a particular disease in a given area.

3. Influence of social, cultural and ecological factors on the epidemiology of the disease.

4. Control of communicable and non-communicable disease by :

a. Diagnosing and treating a case and in doing so demonstrate skills in :

i. Clinical methods,

ii. Use of essential laboratory techniques,

iii. Selection of appropriate treatment regimes,

iv. Follow-up of cases.

b. Principles of planning, implementing and evaluating control measures for the diseases at the community level bearing in mind the relative importance of the disease.

5. Institution of programmes for the education of individuals and communities.

6. Investigating a disease epidemic.

7. Awareness of the National Disease Control Programmes.

8. Level of awareness of causation and prevention of disease amongst individuals and communities.

9. Control of communicable and non-communicable diseases by diagnosing and treating a case and in doing so demonstrate skills in:

i. Instituting measures, where necessary, for preventing disabilities/ deformities

ii. Rehabilitation of the patient.

10. Understand the principles of measures to control a disease epidemic.

11. Training of health workers in (i) disease surveillance, (ii) control and treatment, (iii) health education.

12. Managerial skills in the areas of (i) supervision, (ii) collection and compilation of data, (iii) maintenance of records, (iv) transmission of data.

IV. BIOSTATISTICS

1. a. The scope and uses of biostatistics.

   b. Collection, classification and presentation of statistical data.

   c. Analysis and interpretion of data.

2. Obtaining information, computing indices (rates and ratio) and making comparisons.

3. Apply statistical methods in designing of studies

   a. Choosing of appropriate controls.

   b. Applying test of significance.

   c. Use of statistical tables.

V. ENTOMOLOGY

1. Role of vectors in the causation of diseases.

2. Steps of management of a case of insecticide toxicity.

3. Identifying features of and mode of transmission of vector borne diseases.

4. Methods of vector control with advantages and limitations of each.

5. Mode of action, dose and application cycle of commonly used insecticides.

VI. ENVIRONMENTAL SANITATION

1. a. Awareness of the concept of safe and wholesome water.

   b. Awareness of the requirements of a sanitary sources of water.

   c. Understanding the methods of purification of water on small scale with stress on chlorination of water.

   d. Various biological standards.

2. Concepts of safe disposal of human excreta.

3. Physical, chemical standards; tests for assessing quality of water.

4. Disposal of solid waste, liquid waste both in the context of urban and rural conditions in the country.

5. Problems in the disposal of refuse, sullage and sewage.

6. a. Sources, health hazards and control of environmental pollution.

   b. Influence of physical factors - like heat humidity, cold, radiation and noise - on the health of the individual and community.

   c. Standards of housing and the effect of poor housing on health.

   d. Large scale purification of water

VII. MATERNAL AND CHILD HEALTH (MCH)

1. Need for specialised services for these groups.

2. Magnitude of morbidity and mortality in these groups in a given area.

3. Local customs and practices during pregnancy, child birth and lactation.

4. Concepts of 'high risk' and 'MCH Package', Child survival and Safe Motherhood, Integrated Child Development Scheme and other existing regional programmes.

5. Under-5 : morbidity, mortality, high risk and care.

6. Monitoring of growth and development and use of Road to Health Chart.

7. Organisation, implementation and evaluation of programmes for mothers and children as per National Programme guidelines supervising health personnel; maintaining records; performing a nutritional assessment; promoting breast feeding.

8. Genetics and Community Health.

VIII. DEMOGRAPHY & FAMILY PLANNING

1. Definition of demography and family welfare programme.

2. Stages of the demographic cycle and their impact on the population.

3. Definition, calculation and interpretation of demographic indices like birth rate, death rate, growth rate, fertility rates.

4. Reasons for rapid population growth in India.

5. Need for population control measures and the National Population Policy.

6. Identify and describe the different family planning methods and their advantages and shortcomings.

7. Demonstrate skills in motivating a couple for selecting an appropriate family planning method.

8. Medical Termination of Pregnancy Act.

9. Organisational, technical and operational aspects of the National Family Welfare Programme and participate in the implementation of the Programme.

10. Give guidance for MTP and infertility services.

11. Recent advances in contraception.

IX. HEALTH PLANNING AND MANAGEMENT

1. Explain the terms : public health, public health administration, regionalisation, comprehensive medical care, delivery of health care, planning, management, evaluation.

2. Components of health care delivery.

(i) describe the salient features of the National Health Policy concerning :

(a) provision of medical care; (b) primary health care and Health for All; (c) health manpower development; (d) planned development of health care facilities; (e) encouragement of indigenous systems of medicine.

(ii) explain the process of health planning in India by demonstrating awareness of :

- the health systems and health infrastructure at centre, state and district levels.
- the inter-relationship between community development block and primary health centre.
- the organisation, functions and staffing pattern of community health centres, primary health centres, rural health centre and sub-centre.
- the job descriptions of health supervisor (male and female); health workers; village health guide; anganwadi workers; traditional birth attendants.
- the activities of the health team at the primary health centre.

3. Familiarity with management techniques : define and explain principles of management; explain the three broad functions of

management (planning, implementation and evaluation) and how they relate to each other.

4. The components of health care delivery. For this, he should :

   - Appreciate the need for International Health Regulations and Disease surveillance.
   - Be aware of the constitutional provisions for health in India.
   - Enumerate the three major divisions of responsibilities and functions (concerning health) of the union and the state governments.
   - Explain the process of health planning in India by demonstrating awareness of recommendations of different health committees such as Bhore, Mudaliar etc.
   - Appreciate the role of national, international voluntary agencies in health care delivery.

5. Explain the terms : cost - effectiveness, cost - benefit.

X. NUTRITION

1. Common sources of various nutrients and special nutritional requirement according to age, sex, activity, physiological condition.

2. Nutritional assessment of individual, families and the community by selecting and using appropriate methods such as : anthropometry, clinical, dietary, laboratory techniques.

3. Compare recommended allowances of individual and families with actual intake.

4. Plan and recommend a suitable diet for the individuals and families bearing in mind local availability of foods, economic status etc.

5. Common nutritional disorders : protein energy malnutrition, Vit. A. def., anaemia, iodine deficiency disease, fluorosis, food toxins diseases and their control and management.

6. National programmes in nutrition.

XI. SOCIOLOGY

1. Conduction of a clinico-social evaluation of the individual in relation to social, economic and cultural aspects; educational and residential background; attitude to health, disease and to health services; the individual's family and community.

2. Assessment of barriers to good health, recovery from sickness and to leading a socially and economically productive life.

3. Development of a good doctor-patient relationship.

4. Identification of social factors related to health and disease in the context of urban and rural societies.

5. Impact of urbanisation on health and disease.

XII. SCHOOL HEALTH

1. Objectives of the School Health Programme.

2. Activities of the Programmes like :

(a) Carrying out periodic medical examination of the children and the teachers.

(b) Immunisation of the children in the school.

(c) Health education.

(d) Mid-day meals.

3. Obtaining participation of the teachers in the school health programme including maintenance of records; defining healthful practices; early detection of abnormalities.

XIII. OCCUPATIONAL HEALTH

1. Relate the history of symptoms with the specific occupation including agriculture.

2. Employees State Insurance Scheme.

3. Identification of the physical, chemical and biological hazards to which workers are exposed to while working in a specific occupational environment.

4. Diagnostic criteria of various occupational diseases.

5. Preventive measures against these diseases including accident prevention.

6. Various legislations in relation to occupational health.

XIV. HEALTH EDUCATION (INFORMATION, EDUCATION, COMMUNICATION):

1. Communicate effectively with individuals, family and community using tools and techniques of information, education, communication. To do so, the student should:

   a. Appreciate barriers to effective communication.

   b. Principles, methods and evaluation of health education.

   c. List various methods of health education with their advantages and disadvantages.

   d. Select and use appropriate media (simple audio-visual aids) for effective health education.

2. Use every opportunity for health education of the individual, family and the community.

XV. URBAN HEALTH

1. Common health problems (Medical, Social, Environmental, Economic, Psychological) of urban slum dwellers.
2. Organisation of health services for slum dwellers.
3. Organization of health services in urban areas.

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COMMUNITY HEALTH CELL
LIBRARY
AND
DOCUMENTATION

Skills

Part-I : General Skills

The student should be able to:

1. Elicit the clinico-social history to describe the agent, host and environmental factors that determine and influence health.

2. Recognise and assist in management of common health problems of the community.

3. Apply elementary principles of epidemiology in carrying out simple epidemiological studies in the community.

4. Work as a team member in rendering health care.

5. Carry out health education effectively for the community.

Part-II : Skills in Relation to Specific Topics

1. Communication

The student should be able to communicate effectively with family members at home; patients at clinics or at homes; individuals, family or a group for health education; peers at scientific forums.

2. Team activity

Work as a member of the health team; in planning and carrying out field work like school health.

3. Environmental sanitation

Collect water samples for microbiological evaluation; chlorination of water; estimate the chlorine demand of water; estimate the residual chlorine of water; insecticides: their proper storage and use in control of vectors.

4. Communicable and Non-communicable diseases (including social problems)

a. Eliciting clinico-social history and examining the patient for diagnosis and treatment.

b. Collection of appropriate material for microbiological, pathological or biochemical tests.

c. Fixing, staining and examining smears – peripheral blood smear for malaria and filariasis, sputum for AFB; slit skin smears for leprosy; Hb estimation; urine and stool examination.

d. Assessing the severity and/or classifying dehydration in diarrhoea, upper respiratory tract infection, dog bite, leprosy.

e. Adequate and appropriate treatment and follow-up of leprosy, malaria, filariasis, rabies, upper respiratory tract infections, diarrhoea and dehydration.

f. Advise on the prevention and prophylaxis of common diseases like vaccine preventable diseases, tetanus, malaria, filariasis, rabies, cholera, typhoid, intestinal parasites.

g. Use of proper screening methods in early diagnosis of common diseases.

h. Take necessary steps in disease outbreak / epidemics/ natural disasters - investigation of epidemic, food poisoning; notification; organising medical care following disasters.

5. Maternal and Child Health

   a. Antenatal – examination of the mother; application of the risk approach in antenatal care.

   b. Intranatal – conducting a normal delivery; early recognition of danger in intranatal period; referral of cases requiring special care.

   c. Postnatal – assessment of the mother and new born, advice on appropriate family planning method; promotion of breast feeding; advice on weaning.

   d. Assessment of growth and development of the child – use of the 'road to health' card; recording important anthropometric assessments of the child; giving immunisation to the child; identifying high risk infants.

6. Statistics

    a. Make proper sample.

    b. Apply appropriate tests of significance to make a correct inference.

    c. Simple analysis and presentation of data.

7. Nutrition

    a. Conducting a diet survey.

    b. Community survey and clinical diagnosis of nutritional deficiencies : vitamin A deficiency, iodine deficiency, malnutrition.

    c. Making recommendations regarding diet.

8. Occupational Health

    a. Inspection of work sites.

    b. Recommendation in improving work sites.

    c. Medical examination of workers.

9. Health care of the community

    a. Ensuring community participation in health care.

    b. Arranging intersectoral coordination where necessary.

    c. Working in liason with other agencies involved in health care in various National Health Programmes.

10. Health Management

    a. Be an effective team leader.

    b. Guide and train workers.

    c. Supervision of workers and programmes.

11. Family Planning : Advice on appropriate methods.

12. Managerial : Organise antenatal and under-five clinic.

MEDICINE

Departmental Objectives :

At the end of clinical postings in General Medicine, the medical student will :

Be able to evaluate each patient as a person in society and not merely as a collection of organ systems.

Have developed an interest in and care for all types of patients.

Be able to discern the hopes and fears of patients which inevitably underlie the symptom complexes and know how to handle these emotions, both in himself and in others.

Possess adequate knowledge in the science of Medicine and be able to:

Elicit a good clinical history, and physical findings, elucidate the clinical problems based on these and discuss the means of solving the problems by the use of differential diagnosis.

Requisition relevant laboratory tests and perform common side lab procedures.

Outline the principles of management of various diseases.

Have an open attitude to the newer developments in medicine so as to be aware of the need to keep abreast of new knowledge.

Diagnose and provide competent initial care to medical emergencies.

Refer medical problems to secondary and tertiary care at appropriate times.

Have an understanding of the art of medicine involving communication with patients, demonstration of empathy, reassurance, patient education and an understanding of the patient's socio-economic circumstances in relation to management.

Learn to be adaptable to new ideas and new situations where resources may be limited.

Possess knowledge of and perform certain procedures.

Understand the ethical and legal implications of his medical decisions.

Course Contents

I. CLINICAL METHODS IN THE PRACTICE OF MEDICINE

1. Clinical approach to the patient : The art of medicine, doctor patient relationship, communication skills and doctor's responsibilities.

2. Clinical Approach to disease and care of patient; Diagnostic possibilities based on interpretation of history, physical findings and laboratory investigations and principles of rational management.

II. COMMON SYMPTOMS OF DISEASE

1. Pain : Pathophysiology, clinical types, assessment and management.

2. Fever : Pathophysiology of heat regulation, its disturbances, clinical types, clinical assessment and management.

3. Cough, expectoration and hemoptysis.

4. Dyspnoea, tachypnoea, and cyanosis.

5. Common urinary symptoms including dysuria, oliguria. nocturia, polyuria, incontinence and enuresis.

6. Edema and anasarca.

7. Shock and cardiovascular collapse.

8. Cardiac murmurs : functional and organic.

9. Anorexia, nausea and vomiting.

10. Constipation and diarrhoea.

11. Hematemesis, malena and hematochezia.

12. Jaundice and hepatomegaly.

13. Abdominal swelling and ascites.

14. Weight loss and weight gain.

15. Fainting, syncope and seizures; headache , dizziness and vertigo.

16. Paralysis, movement disorders and disorders of gait.

17. Coma and other disturbances of consciousness.

18. Pallor and bleeding.

19. Enlargement of lymphnodes and spleen.

20. Joint pains, and pain in the extremities and back.

III. NUTRITION/EXPOSURE TO PHYSICAL AND CHEMICAL AGENTS

1. Nutrition in clinical medicine and dietary management.

i) Nutritional requirements.

ii) Protein calorie malnutrition in adults.

iii) Obesity.

iv) Vitamin deficiency and excess.

2. Fluid and electrolyte balance; acidosis and alkalosis in particular relevance to vomiting, diarrhoea, uremia and diabetic ketoacidosis.

3. Poisonings : phenobarbitone, organophosphorous compounds, sedative/hypnotic, and others common in the locality.

4. Acute and chronic effects of alcohol and their management.

5. Venoms, stings, insect bites : poisonous snakes, insects and scorpions.

6. Disturbances of temperature : heat stroke, heat exhaustion and cold exposure.

7. Drowning, electrocution and radiation hazards.

IV. INFECTIONS

1. Approach to infectious diseases – diagnostic and therapeutic principles.

2. General principles of rational use of antibiotics and other chemotherapy against the following:

i) Common gram positive infections.

ii) Common gram negative infections.

iii) Enteric fever.

iv) Cholera, gastroenteritis, food poisoning and dysentry.

v) Influenza and other common viral respiratory infections

vi) Rabies.

vii) Tetanus.

viii) Herpes simplex and herpes zoster.

ix) Amoebiasis and worm infestations.

x) Malaria, filariasis, leishmaniasis.

xi) Common exanthemata.

xii) HIV infection and infections in the immunocompromised conditions.

xiii) Common sexually transmitted diseases.

xiv) Common fungal infections.

xv) Viral encephalitis.

xvi) Tuberculosis.

xvii) Leprosy.

xviii) Infectious mononucleosis.

xix) Brucellosis.

V. HAEMATOLOGY

1. Definition, prevalence, etiological factors, pathophysiology, pathology, recognition, investigations and principles of treatment of :

   i) Anemias : iron deficiency, megaloblastic and common haemolytic anemias (thalassemia, sickle cell and acquired hemolytic).

   ii) Common bleeding disorders (thrombocytopenia and hemophilia).

   iii) Agranulocytosis and aplastic anemia.

2. Leukemias.

3. Lymphomas.

4. Blood group and transfusion : Major blood group systems

and histocompatibility complex, concepts of transfusion and component therapy; indications for transfusion therapy, precautions to be taken during blood transfusion, hazards of transfusion and safe handling of blood and blood products.

VI. RESPIRATORY SYSTEM

1. Physiology and diagnostic methods: Sputum examination, X-ray chest, pulmonary function tests and bronchoscopy.

2. Upper respiratory infections.

3. Pneumonias.

4. Bronchiectasis and lung abscess.

5. Bronchial asthma and tropical eosinophilia.

6. Chronic obstructive airway disease and cor pulmonale.

7. Acute and chronic respiratory failure.

8. Diseases of pleura : pleural effusion, empyema, pneumothorax.

9. Pulmonary tuberculosis.

10. Neoplasms of lung.

11. Common occupational lung diseases.

VII. CARDIO - VASCULAR SYSTEM

1. ECG, Xray chest with reference to common cardiovascular diseases.

2. Coronary artery disease.

3. Rheumatic fever and rheumatic heart disease.

4. Infective endocarditis.

5. Hypertension and hypertensive heart disease.

6. Acute and chronic heart failure.

7. Common congenital heart diseases in adolescents and adults : ASD, VSD PDA, TOF and coarctation of aorta.

8. Common cardiac arrhythmias.

9. Acute and chronic pericarditis, pericardial effusion and cardiac tamponade.

10. Common aortic diseases; peripheral vascular disease: arterial and venous.

VIII. GASTRO-INTESTINAL TRACT

1. Stool examination, endoscopy and radiology in reference to common gastrointestinal diseases.
2. Acid peptic disease.
3. Malabsorption syndrome.
4. Inflammatory bowel disease and irritable bowel syndrome.
5. Acute and chronic hepatitis.
6. Cirrhosis of liver.
7. Abdominal tuberculosis.

IX. EMERGENCY MEDICINE

1. Cardiopulmonary resuscitation.
2. Acute pulmonary oedema.
3. Hypertensive emergencies.
4. Diabetic ketoacidosis and hypoglycemia.
5. Status epilepticus.
6. Acute severe bronchial asthma.
7. Shock and anaphylaxis.
8. Acute myocardial infarction.
9. Upper GI bleed and hepatic coma.
10. Diagnosis and management of comatose patient.
11. Management of unknown poisoning.

X. NEUROLOGICAL SYSTEM

1. Cerebrovascular diseases.
2. Meningitis : viral, bacterial and tuberculous.
3. Peripheral neuropathy.
4. Epilepsy.
5. Extrapyramidal diseases.

6. Common compressive and noncompressive spinal cord syndromes.

7. Motor system disease.

8. Myaesthenia gravis.

9. Common myopathies in India.

10. Degenerative, nutritional and metabolic diseases of the nervous system.

XI. NEPHROLOGY/URINARY SYSTEM

1. Acute renal failure.

2. Chronic renal failure.

3. Glomerulonephritides and nephrotic syndrome.

4. Urinary tract infections / pyelonephritis.

5. Tubulointerstitial diseases and toxic neuropathies.

XII. CONNECTIVE TISSUE DISORDERS

1. Rheumatoid arthritis.

2. Degenerative joint disease including cervical spondylosis.

3. Systemic lupus erythematosus , systemic sclerosis and other collagen vascular diseases.

4. Gout.

XIII. ENDOCRINES

1. Diabetes mellitus.

2. Hypo and hyperthyroidisom; iodine deficiency disorders.

3. Cushing's syndrome and Addison's disease.

4. Pituitary disorders : Acromegaly and Sheehan's syndrome.

5. Calcium and phosphorus metabolism: parathyroid and metabolic bone disease.

XIV. GERIATRICS

Geriatric medicine : General principles of dealing with health problems of the elderly.

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination including internal examinations (per-rectal and per-vaginal) and examinations of all organs/systems in adults and children including neonates.

2. Arrive at a logical working diagnosis after clinical examination.

3. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.

4. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

   a. Patient.

   b. Disease.

   c. Socio-economic status.

   d. Institutional/governmental guidelines.

5. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

6. Assess and manage fluid/electrolyte and acid-base imbalance.

7. Interpret abnormal biochemical laboratory values of common diseases.

8. Interpret skiagrams of common diseases.

9. Identify irrational prescriptions and explain their irrationality.

10. Interpret serological tests such as VDRL, ASLO, Widal, HIV, Rheumatoid factor, Hepatitis and TORCH infections.

11. Demonstrate empathy and humane approach towards patients, relatives and attendants.

12. Demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family.

13. Develop a proper attitude towards patients, colleagues and other staff.

14. Maintain an ethical behaviour in all aspects of medical practice.

15. Develop a holistic attitude towards medicine taking in social and cultural factors in each case.

16. Obtain informed consent for any examination/procedure.

17. Appreciate patients' right to privacy.

18. Write a complete case record with all necessary details.

19. Write a proper discharge summary with all relevant information.

20. Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.

21. Assess the need for and issue proper medical certificates to patients for various purposes.

22. Adopt universal precautions for self protection against HIV and hepatitis and counsel pateints.

23. Perform skin sensitivity tests for drugs and serum.

24. Record and interpret an ECG and be able to identify common abnormalities like myocardial infarction and arrhythmias.

25. Start i.v. line and infusion .

26. Do venous cutdown.

27. Give intradermal / SC / IM / IV injections.

28. Insert and manage a C.V.P. line.

29. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.

30. Pass a nasogastric tube.

31. Pass a stomach tube and do stomach wash.

32. Administer enemas.

33. Do lumbar puncture.

34. Do Pleural/peritoneal tap.

35. Aspirate liver abscess.

36. Catheterise bladder in both males and females.

37. Relieve tension pneumothorax by inserting a needle.

38. Administer O_2 by mask, catheter, O_2 tent and be able to handle O_2 cylinder.

39. Insert flatus tube.

40. Provide first aid to patients with peripheral vascular failure and shock.

41. Manage acute anaphylactic shock.

42. Manage diarrhoeas / dysenteries; Assess dehydration; prepare and administer oral rehydration therapy (ORT).

43. Manage emergencies of drowning.

44. Manage common poisoning.

45. Manage acute pulmonary oedema and left ventricular failure.

46. Manage acute severe bronchial asthma.

47. Do emergency management of epilepsy and status epilepticus.

48. Do emergency management of comatose patients regarding airway, positioning, prevention of aspiration and injuries.

49. Manage hyperpyrexia.

PAEDIATRICS

Departmental Objecties :

The objectives of training the undergraduate students in pediatrics is to ensure that at the end of the training he/she will be able to :

Diagnose and appropriately treat common pediatric and neonatal illnesses.

Identify pediatric and neonatal illnesses and problems that require secondary and tertiary care and refer them appropriately.

Advise and interpret relevant investigations.

Counsel and guide patient's parents and relatives regarding the illness, the appropriate care, the possible complications and the prognosis.

Provide emergency cardio pulmonary resuscitation to new borns and children.

Participate in the National programmes effectively.

Diagnose and effectively treat acute pediatric and neonatal emergencies.

Discharge medico-legal and ethical responsibilities.

Perform routine investigative and therapeutic procedures.

Motivate parents to consent for a diagnostic autopsy.

Course Contents

I. VITAL STATISTICS

1. Introduction to pediatrics with special reference to age related disorders.

2. Definition of mortality rates and ratios: infant, perinatal, maternal, and neonatal.

3. Causes and prevention of infant, perinatal and neonatal mortality.

4. National programmes on maternal and child health.

II. GROWTH AND DEVELOPMENT

1. Anthropometric and developmental assessment, normal and abnormal growth and development patterns, interpretation of growth curves and road to health chart.

2. Psychological and behavioural problems. Approach to a child with growth retardation, and short stature.

III. NUTRITION

1. Normal requirements of protein, carbohydrate, fat, minerals, vitamins and trace elements for newborns, children, pregnant and lactating mothers.

2. Exclusive breast feeding, advantages of breast feeding, infant feeding , weaning diets, planning of preterm nutrition, therapeutic diet chart.

3. Recognition and treatment of nutritional deficiency disorders.

4. Protein energy malnutrition : classification, causes, management including that of complications.

5. National Nutritional and other child health and welfare programmes.

6. Management of problems related to lactation failure.

7. Hyper-Vitaminosis.

IV. IMMUNISATION

1. National Immunisation programmes.

   Vaccines and vaccine preventable diseases.

2. Principles of immunisation.

Vaccine preservation and cold chain.

Indications, contra-indications, Adverse reaction and complications.

3. Investigations and reporting of vaccine preventable diseases.

4. Other newer vaccines – Haemophilus, pneumococcal, hepatitis Meningococcal, mumps, rubella.

V. INFECTIOUS DISEASES

1. Natural history, clinical course, signs, symptoms, investigations, management and prevention of common bacterial, viral, parasitic and fungal infections with special reference to vaccine preventable disease, tuberculosis, mumps, rubella, typhoid, chicken pox and other common childhood exanthematous diseases, and parasitic infestations like Giardiasis, Malaria, Kalazar, Filariasis, Intestinal Helminthiasis.

VI. CENTRAL NERVOUS SYSTEM

1. Clinical diagnosis, investigations and treatment of acute CNS infections: Meningitis including tuberculosis, encephalitis seizure disorders, febrile convulsions, Rheumatic Chorea.

2. Cerebral palsy, mental retardation, hydrocephalus.

VII. GASTRO INTESTINAL SYSTEM

Clinical diagnosis, relevant investigations and management of :

1. Gastro Oesophageal reflux, GI bleeding, short gut syndrome, acute and chronic diarrhoea, Complications of gastroenteritis.

2 Common hepatic disorders : Hepatitis, Indian Childhood Cirrhosis, Obstructive Jaundice, Portal Hypertension.

3. Abdominal Tuberculosis, Acute abdomen including surgical causes, Paralytic Ileus, Chronic constipation and Rectal bleeding.

4. Budd-Chiari syndrome, Metabolic disorders like Wilson's disease.

VIII. GENITO URINARY SYSTEM

1. Clinical features, investigations, complications and management of acute Glomerulonephritis; Nephrotic syndrome,Urinary tract infection- Acute and recurrent.

2. Acute and chronic renal failure.

IX. CARDIO VASCULAR SYSTEM

1. Clinical features, diagnosis, investigation, prevention and treatment of Acute Rheumatic fever, Rheumatic heart disease and complications.

2. Recognition of congenital acyanotic and cyanotic heart diseases and management of cyanotic spells.

3. Prevention, recognition and treatment of Bacterial endocarditis,

4. Diagnosis and management of congestive cardiac failure.

5. Clinical features, diagnosis, prevention and treatment of pericardial effusion and myocarditis.

X. RESPIRATORY SYSTEM

1. Epidemiology, Clinical features, Investigation and management of Acute respiratory Infections of upper and lower tract.

2. Diagnosis and management of Acute Bronchial Asthma, status asthmaticus, Chronic suppurative lung diseases.

3. Diagnosis and appropriate management of Foreign body aspiration.

XI. ENDOCRINE SYSTEM

1. Clinical recognition, causes, laboratory diagnosis, prevention and management of Hypothyroidism (cretinism).

2. Juvenile Diabetes mellitus.

XII. HAEMATOLOGICAL SYSTEM

1. Recognition of clinical features, diagnosis, Laboratory investigations and management of Nutritional and Haemolytic Anaemia.

2. Diagnosis and basic investigations of bleeding and coagulation disorders in newborn and older children, Leukemia and Lymphomas.

XIII. NEONATOLOGY

1. Foetal physiology of normal pregnancy. Identification of antenatal, intrapartum and immediate postnatal risk factors.

2. Definition, Identification and classification of high risk neonate, Neonatal resuscitation, Gestational age assessment and Care of the normal newborn.

3. Management of neonatal problems: Transient Metabolic Disorders, Infections , Minor developmental defects, Infants of diabetic mothers, Haemorrhagic Disease of Newborn, Respiratory Distress, Feeding difficulties, Birth injuries, Anaemia and Jaundice.

4. Management of Meconium aspiration syndrome.

5. Care of the preterm and low birth weight infant: temperature maintenance, feeding, prevention of complications, appropriate method of transfer to tertiary centre.

6. Identification and referral of neonates with congenital malformations like cleft lip, cleft palate, tracheo-esophagal fistula, diaphragmatic hernia, anorectal anomalies.

XIV. GENETIC DISORDERS

1. Terminologies, and Down's Syndrome.

2. Genetic Counselling.

XV. EMERGENCY PAEDIATRICS

1. Clinical features, Etiology, Laboratory diagnosis, prevention and management of : Status asthmaticus, Status epilepticus, Acute Pulmonary oedema, Hypertensive emergencies, Peripheral circulatory failure due to dehydration and haemorrhage, Cardiac failure, Cyanotic spells, Scorpion and snake envenomation, and Common poisoning like kerosine, datura, insecticide.

Miscellaneous Disorders

1. Common child-hood symptoms that cause undue parental anxiety but are of no serious importance : recurrent common cold, stubbornness, temper tantrum, refusal to eat.

2. Juvenile Rheumatoid Arthritis.

3. Perinatal, Neonatal and Paediatrics HIV Infections.

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination of all organs/systems in children including neonates.

2. Arrive at a logical working diagnosis after clinical examination.

3. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.

4. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

   a. Patient.

   b. Disease.

   c. Socio-economic status.

   d. Institutional/governmental guidelines.

5. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

6. Demonstrate empathy and humane approach towards patients, relatives and attendants.

7. Develop a proper attitude towards patients, colleagues and other staff.

8. Maintain an ethical behaviour in all aspects of medical practice.

9. Monitor growth and development of children and differentiate normal from abnormal.

10. Assess and manage fluid/electrolyte and acid-base imbalance.

11. Manage diarrhoeas/ dysenteries: Assess dehydration; prepare and administer oral rehydration therapy (ORT).

12. Detect and institute corrective measures for nutritional deficiency.

13. Write a complete case record with all necessary details.

14. Write a proper discharge summary with all relevant information.

15. Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.

16. Organise antenatal, postnatal, well-baby and other clinics.

17. Motivate colleagues, community and patients to actively participate in national health programmes.

18. Organise and give training in first aid.

19. Adopt universal precautions for self protection against HIV and hepatitis and counsel patients.

20. Maintain cold chain for vaccines.

21. Perform and read Mantoux test.

22. Start i.v. line and infusion in children and neonates.

23. Do venous cutdown.

24. Give intradermal / SC / IM / IV injection.

25. Insert and manage a C.V.P. line

26. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns/children including endotracheal intubation.

27. Pass a nasogastric tube.

28. Manage hyperpyrexia.

DERMATOLOGY

Departmental Objectives :

At the end of the training in dermatology, the student should be able to :

Demonstrate sound knowledge of common diseases, their clinical manifestations, and of investigative procedures to confirm their diagnosis.

Demonstrate comprehensive knowledge of various modes of topical therapy.

Describe the mode of action of commonly used drugs, their doses, side-effects/toxicity, indications, contraindications and interactions.

Describe commonly used modes of management including the medical and surgical procedures available for the treatment of various diseases, and to offer a comprehensive plan of management for a given disorder.

Diagnose and manage emergencies in the speciality recognizing the need for referral, when appropriate and necessary.

Course Contents

I. DISEASES CAUSED BY NUTRITIONAL AND ENVIRONMENTAL FACTORS

II. INFECTIVE DISORDERS : PYODERMAS, COMMON VIRAL, AND COMMON FUNGAL.

III. INFESTATIONS : SCABIES, AND PEDICULOSIS.

IV. MELANOCYTE, PIGMENT METABOLISM AND OTHER DISORDERS OF PIGMENTATION

1. Vitiligo : diagnosis.
2. Icthyosis.
3. Disorders of Pigmentation: Albinism and Chloasma.

V. ALLERGIC DISORDERS

1. Urticaria, Atopic dermatitis, and Contact dermatitis

VI. DRUG REACTIONS AND ERUPTIONS

1. Common drug reactions.
2. Erythema multiforme, Toxic epidermal necrolysis, and Exfoliative dermatitis

VII. DERMATITIS AND ECZEMA

VIII. VESICULOBULLOUS DISEASES

1. Pemphigus
2. Vesiculobullous diseases: Pemphigoid and Dermatitis Herpetiformis.

IX. ALOPECIA AND HIRSUTISM

X. STRUCTURE AND FUNCTION OF SEBACEOUS GLANDS AND DISEASES

1. Acne.
2. Seborrhoeic dermatitis.
3. Other Diseases of sebaceous glands
4. Pityriasis capitis.

XI. STRUCTURE, FUNCTION AND DISEASES OF SWEAT GLANDS

1. Miliaria.

2. Hyperhidrosis.

XII. LEPROSY

1. Pathology, Clinical features, Diagnosis, Reactions, Management, Deformities, and Control programme.

XIII. PSORIASIS

XIV. SEXUALLY TRANSMITTED DISEASES

1. Genital ulcerative diseases.

2. Genital discharge diseases.

XV. DERMATOLOGICAL THERAPY

XVI. LICHEN PLANUS

1. Lichen Planus.

Skills

1. Perform skin scrapings and do a KOH preparation for fungus infections.

2. Prepare slit skin and nasal smear for lepra bacilli.

PSYCHIATRY

Departmental Objectives :

At the end of the course, the student will be able to:

Comprehend nature and development of different aspects of normal human behaviour like learning, memory, motivation, personality, and intelligence.

Recognize differences between normal and abnormal behaviour.

Classify psychiatric disorders.

Recognize clinical manifestations of common syndromes, and plan their appropriate management.

Describe rational use of different modes of therapy in psychiatric disorders.

Course Contents

1. Historical aspects of the diagnosis and treatment of mental illness; concept of mental health vs mental illness; classificatory system currently in use in psychiatry.

2. Eliciting a detailed psychiatric history and conducting a mental status examination; defining, eliciting and interpreting psycho pathological symptoms and signs.

3. Concepts underlying normal and abnormal human behaviour; principles of learning, memory, personality and intelligence; psychopathology (cf.behavioural sciences).

4. Classification of the different types of psychoses; differences between psychoses and neuroses; difference between functional and organic psychoses.

5. Clinical features, diagnosis and management of :

   a. Schizophrenia.

   b. Mania and depression.

   c. Anxiety disorders and hysteria.

   d. Dementia.

   e. Alcoholism.

   f. Drug abuse.

6. Clinical recognition and initial therapy of psychiatric emergencies.

7. Clinical features, diagnosis and management of psychiatric disorders of childhood and adolescence.

8. Use of questionnaires in psychology.

9. Use of intelligence tests.

10. Personality disorders.

Skills

1. Do psychiatric evaluation and recognise common psychiatric illnesses.

Radiodiagnosis

Departmental Objectives :

At the end of the course in Radiodiagnosis, the student should :

Be familiar with various imaging techniques, their advantages and disadvantages.

Be aware of indications for common x-ray investigations and views to be taken for various organs.

Know the indications for C.T. Scan and Ultrasound.

Be aware of radiation hazards and protection with reference to self, patient and the public.

Course Contents

I. RESPIRATORY SYSTEM

1. Diagnosis of common conditions like tuberculosis, consolidation, pleural effusion, pneumothorax, lung abscess, collapse, bronchogenic carcinoma and mediastinal masses.

2. Differential diagnosis of mediastinal masses.

3. Indications for bronchography, tomography and CT scans.

II. CARDIOVASCULAR SYSTEM

1. Normal topography of heart, cardiomegaly.

2. Common rheumatic heart diseases and pericardial effusion.

III. GASTROINTESTINAL SYSTEM

1. Diagnosis of acute abdominal conditions like intestinal obstruction, perforation.

2. Indications and contraindications for Barium studies.

3. Differential diagnosis of calcification and stones on plain x-ray.

4. Diagnosis of gastric ulcer / duodenal ulcer / cancer stomach / oesophageal cancer on Barium studies.

IV. OBSTETRICS & GYNAECOLOGY

1. Radiation hazards to a pregnant woman and child and the ideal time to take x-rays during pregnancy and the number of views to be taken.

V. SKELETAL SYSTEM

1. Diagnosis of common fractures, caries spine, osteomyelitis of bones, nutritional deficiencies like rickets, and common bone tumours and diseases of joints.

VI. CENTRAL NERVOUS SYSTEM

1. Signs of raised intraeramal tension ICT on plain x-ray of skull.

VII. EXCRETORY SYSTEM

1. Identification of renal calculi.

Skills

1. Interpret skiagrams of common diseases.

RADIOTHERAPY

Departmental Objectives :

At the end of training in Radiotherapy, the student should be able to:

Exhibit awareness of the principles of radiotherapy, the radio-responsiveness of various tumours and management of common cancers like cervical, breast and oral cancers.

Refer for further consultation at appropriate time without delay.

State general complications of irradiation and their management.

List common chemotherapeutic drugs and toxicity of the same.

Implement health education programmes regarding prevention and early diagnosis of tobacco related cancers, cervical cancers, breast cancers.

Know the general outlines of use of radio-isotopes in diagnosis and therapy.

Course Contents

1. Physical principles of radiotherapy.
2. Principles of chemotherapy.
3. Prevention of cancer.
4. Early diagnosis of cancer.
5. Principles of nuclear medicine.
6. Radio responsiveness of various tumours.
7. Common radiation reactions and management.
8. Radiotherapy in some of the commonly seen cancers.
9. Chemotherapy in certain cancers like childhood tumours, leukaemia and lymphomas.
10. Radio-isotopes in diagnosis and therapy.

ANAESTHESIOLOGY

Departmental Objectives ;

At the end of the training, the students should be able to :

Perform cardio-pulmonary resuscitation with the available resources and transfer the patient to a bigger hospital for advanced life support.

Set up intravenous infusion.

Clear and maintain airway in an unconscious patient.

Administer oxygen correctly.

Perform simple nerve block.

Exhibit awareness of the principles of administration of general and local anaesthetics.

Course Contents

1. Cardiopulmonary resuscitation (CPR) – basic and advanced, including use of simple ventilators.

2. Anatomy of upper airway; sites of respiratory obstruction and management of airway in an unconscious patient.

3. Various methods of oxygen therapy and its indications.

4. The pharmacology of local anaesthetics, their use and how to perform simple nerve blocks like

   - Infiltration anaesthesia,
   - Digital block,
   - Ankle block,
   - Pudendal and paracervical blocks.

5. Management of complication of regional anaesthesia.

6. The principles of administration of general anaesthetics.

Skills

1. Start i.v. line and infusion in adults, children and neonates.

2. Do venous cutdown.

3. Insert and manage a C.V.P. line.

4. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.

5. Do lumbar puncture.

6. Perform nerve blocks like infiltration, digital, pudendal, paracervical and field block.

7. Administer O_2 by mask, catheter, O_2 tent and be able to handle O_2 cylinder.

Surgery

Departmental Objectives :

At the end of the training, the undergraduate student will be able to :

a) Diagnose and appropriately treat common surgical ailments;

b) Identify situations calling for urgent or early surgical intervention and refer at the optimum time to the appropriate centres;

c) Requisition and interpret basic relevant investigations;

d) Provide adequate pre and post-operative and follow-up care of surgical patients;

e) Counsel and guide patients and relatives regarding need, implications and problems of surgery in the individual patient;

f) Develop adequate and right attitude in dealing with surgical problems of patients;

g) Provide emergency resuscitative measures in acute surgical situations including trauma.

Organise and conduct relief measures in situations of mass casualties.

Effectively participate in the National Health Programmes especially the Family Welfare Programme.

Discharge effectively medico-legal and ethical responsibilities.

Perform simple routine surgical procedures.

Course Contents

I. GENERAL PRINCIPLES

1. Wound Healing and Management, Scars : Hypertrophic scar and keloid; First aid management of severely injured.

2. Asepsis, antisepsis, sterilisation.

3. Surgical sutures, knots, drains, bandages and splints

4. Surgical infections and rational use of antibiotics : Causes of infection, prevention of infection, common organisms causing infection.

5. Boils, cellulitis, abscess, necrotising fascitis.

6. Tetanus and Gas gangrene: Prevention of Tetanus and Gas Gangrene.

7. Chronic specific infections : Tuberculosis, Filariasis, Leprosy.

8. Antibiotic therapy.

9. Hospital infection.

10. AIDS and hepatitis B.

11. Mechanisms and management of missile, blast and gunshot injuries.

12. Surgical aspects of diabetes mellitus.

13. Bites and stings.

14. Organ transplantation: Basic Principles.

15. Nutritional support to surgical patients.

II. RESUSCITATION

1. Fluid and Electrolyte balance.

2. Shock : Aetiology, Pathophysiology and Management.

3. Blood Transfusion : Indications and hazards.

4. Common postoperative complications.

III. COMMON SKIN AND SUBCUTANEOUS CONDITIONS

1. Sebaceous cyst, dermoid cyst, lipoma, Haemangioma, Neurofibroma, pre malignant conditions of the skin, Basal

cell carcinoma, squamous cell carcinoma, Naevi and malignant melanoma.

2. Sinus and fistulae. Pressure sores; prevention and management.

IV. ARTERIAL DISORDERS

1. Acute arterial obstruction : diagnosis and initial management; types of gangrene; diagnosis of chronic arterial insufficiency with emphasis on Buerger's disease, atherosclerosis.

2. Investigation in case of arterial obstruction; Amputations. Vascular injuries: basic principles of management.

V. VENOUS DISORDERS

1. Varicose veins : diagnosis and management; deep venous thrombosis : diagnosis, prevention, principles of therapy; thrombophlebitis.

VI. LYMPHATICS AND LYMPH NODES

1. Diagnosis and principles of management of lymphangitis, lymphedema, acute and chronic lymphadenitis; cold abscess, lymphomas, surgical manifestations of filariasis.

VII. BURNS

1. Causes, prevention and first aid management; Pathophysiology; assessment of depth and surface area, fluid resuscitation; skin cover; prevention of contractures.

VIII. SCALP, SKULL AND BRAIN

1. Wounds of scalp and its management : recognition, diagnosis and monitoring of patients with head injury including unconsciousness; Glassgow coma scale recognition of acute cerebral compression.

IX. ORAL CAVITY, JAW, SALIVARY GLANDS

Oral Cavity :

1. Cleft lip and palate; Leukoplakia; retention cysts; ulcers of the tongue.

2. Features, diagnosis and basic principles of management of carcinoma lip, buccal mucosa and tongue, prevention and staging of oral carcinomas.

Salivary Glands :

1. Acute sialoadenitis, neoplasms : diagnosis and principles of management .

2. Epulis, cysts and tumors of jaw; maxillofacial injuries; salivary fistulae.

X. NECK

1. Branchial cyst; cystic hygroma.

2. Cervical lymphadenitis : Non specific and specific, tuberculosis of lymphnodes, secondaries in neck.

3. Thoracic outlet syndrome : diagnosis.

XI. THYROID GLAND

1. Thyroid : surgical anatomy, physiology, investigations of thyroid disorders; types, clinical features, diagnosis and principles of management of goitre, thyrotoxicosis and malignancies; thyroglossal cyst and fistula.

2. Thyroiditis, Hypothyroidism.

XII. PARATHYROID AND ADRENAL GLANDS

1. Clinical features and diagnosis of hyperparathyroidism, adrenal hyperfunction/hypofunction.

XIII. BREAST

1. Surgical anatomy; nipple discharge; acute mastitis, breast abscess; mammary dysplasia; gynaecomastia; fibroadenomas.

2. Assessment and investigations of a breast lump.

3. Cancer breast : diagnosis, staging, principles of management.

XIV. THORAX

1. Recognition and treatment of pneumothorax, haemothorax, pulmonary embolism : prevention/recognition and treatment,. flail chest; stove in chest; postoperative pulmonary complications.

2. Principles of management of pyothorax; cancer lung.

XV. HEART AND PERICARDIUM

1. Scope of cardiac surgery.

XVI. OESOPHAGUS

1. Dysphagia : Causes, investigations and principles of management.

2. Cancer oesophagus : principles of management.

XVII. STOMACH AND DUODENUM

1. Anatomy, Physiology, Congenital hypertrophic pyloric stenosis; aetiopathogenesis, diagnosis and management of : peptic ulcer, cancer stomach; upper gastrointestinal haemorrhage with special reference to bleeding varices and duodenal ulcer.

XVIII. LIVER

1. Clinical features, diagnosis and principles of management of : Amoebic liver abscess, hydatid cyst and portal hypertension.

2. Surgical anatomy; primary and secondary neoplasms of liver.

XIX. SPLEEN

1. Splenomegaly : causes, investigations and indications for splenectomy; splenic injury.

XX. GALL BLADDER AND BILE DUCTS

1. Anatomy, Physiology and investigations of biliary tree; clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis; obstructive jaundice.

2. Carcinoma gall bladder, choledochal cyst.

XXI. PANCREAS

1. Acute pancreatitis : clinical features, diagnosis, complications and management.

2. Chronic pancreatitis, cancer pancreas.

XXII. PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE

1. Peritonitis : causes, recognition and principles of management; intraperitoneal abscesses.

2. Laparoscopy.

XXIII. SMALL AND LARGE INTESTINES

1. Diagnosis and principles of treatment of : Intestinal amoebiasis, tuberculosis of intestine, carcinoma colon; lower gastrointestinal haemorrhage.

2. Ulcerative colitis, Premalignant conditions of large bowel.

XXIV. INTESTINAL OBSTRUCTION

1. Types , aetiology, diagnosis and principles of management; paralytic ileus.

XXV. ACUTE ABDOMEN

1. Causes, approach, diagnosis and principles of management.

XXVI. APPENDIX

1. Diagnosis and management of acute appendicitis, appendicular lump and abscess.

XXVII. RECTUM

1. Carcinoma of rectum : diagnosis, clinical features and principles of management; indications and management of colostomy.

2. Management of carcinoma rectum; prolapse of rectum.

XXVIII. ANAL CANAL

1. Surgical anatomy. Clinical features and management of : fissure, fistula in ano, perianal and ischiorectal abscess and haemorrhoids; Diagnosis and referral of anorectal anomalies.

2. Anal carcinoma.

XXIX. HERNIAS

1. Clinical features, diagnosis, complications and principles of management of : umblical, Inguinal and femoral hernia.

2. Epigastric hernia; omphalitis; umbilical fistulae; burst abdomen and ventral hernia.

XXX. GENITO – URINARY SYSTEM

1. Symptoms and Investigations of the urinary tract.

XXXI. KIDNEY AND URETER

1. Investigation of renal mass; diagnosis and principles of management of urolithiasis, hydronephrosis, pyonephrosis, perinephric abscess and renal tumours.

2. Renal tuberculosis.

XXXII. URINARY BLADDER

1. Causes, diagnosis and principles of management of haematuria, anuria and acute retention of urine.

XXXIII. PROSTATE AND SEMINAL VESICLES

1. Benign prostatic hyperplasia : diagnosis and management.

2. Carcinoma prostate.

XXXIV. URETHRA AND PENIS

1. Diagnosis and principles of management of Phimosis, paraphimosis and carcinoma penis.

2. Principles of management of urethral injuries.

XXXV. TESTES AND SCROTUM

1. Diagnosis and principles of treatment of undescended testis; torsion testis; hydrocele, haematocoele, pyocoele, epididymorchitis; and testicular tumours.

2. Varicocele.

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination including internal examinations (per-rectal and per-vaginal) and examinations of all organs/systems in adults and children.

2. Arrive at a logical working diagnosis after clinical examination.

3. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.

4. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

   a. Patient;

   b. Disease;

   c. Socio-economic status;

   d. Institutional/governmental guidelines.

5. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

6. Demonstrate empathy and humane approach towards patients, relatives and attendants.

7. Develop a proper attitude towards patients, colleagues and other staff.

8. Demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family.

9. Establish rapport and talk to patients, relatives and community regarding all aspects of medical care and disease.

10. Write a complete case record with all necessary details.

11. Write a proper discharge summary with all relevant information.

12. Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.

13. Assess the need for and issue proper medical certificates to patients for various purposes.

14. Maintain an ethical behaviour in all aspects of medical practice.

15. Appreciate patients' right to privacy.

16. Obtain informed consent for any examination/procedure.

17. Be able to do surface marking of common superficial arteries, veins, nerves and viscera.

18. Assess and manage fluid/electrolyte and acid-base imbalance.

19. Adopt universal precautions for self protection against HIV and hepatitis and counsel pateints.

20. Start i.v. line and infusion in adults, children and neonates.

21. Do venous cutdown.

22. Give intradermal / SC/ IM/IV injection.

23. Insert and manage a C.V.P. line.

24. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.

25. Pass a nasogastric tube.

26. Pass a stomach tube and do stomach wash.

27. Perform vasectomy.

28. Perform circumcision.

29. Perform reduction of paraphimosis.

30. Do Proctoscopy.

31. Do injection and banding of piles.

32. Incise and drain superficial abscesses.

33. Manage superficial wounds and do suturing of superficial wounds & wound toilet.

34. Remove small cutaneous/subcutaneous swellings.

35. Control external haemorrhage.

36. Catheterise bladder in both males and females.

37. Perform nerve blocks like infiltration, digital, pudendal, paracervical and field block.

38. Relieve tension pneumothorax by inserting a needle.

39. Insert flatus tube.

40. Provide first aid to patients with peripheral vascular failure and shock.

41. Assess degree of burns and administer emergency management.

ORTHOPAEDICS

Departmental Objectives :

At the end of the training, the student should be able to :

Describe aetiology, pathophysiology, principles of diagnosis and management of common orthopedic problems including emergencies.

Course Contents

I. TRAUMA

1. General principles in diagnosis, first aid and treatment methods of closed fractures and open fractures, open reduction including principles of internal fixation and external fixation, their complications. Preservation of amputated parts before transfer.

2. General principles of diagnosis and management of non-unions and delayed unions.

II. DIAGNOSIS, FIRST AID AND REFERRAL OF :

1. Fracture clavicle.

2. Anterior dislocation of shoulder.

3. Fracture proximal end, shaft, supracondylar, and internal condylar humerus.

4. Posterior dislocation of elbow.

5. Fracture shaft of radius and ulna.

6. Fracture of distal radius.

7. Traumatic dislocation of hip.

8. Fracture femur: neck, trochanter and shaft.

9. Fracture patella.

10. Fracture shaft tibia and fibula.

11. Haemarthrosis, traumatic synovitis.

12. Injury to muscles and ligaments (shoulder arc syndrome, tennis elbow, ankle sprain).

13. General principles of management of hand injuries.

14. Peripheral nerve injuries.

15. Spinal injuries.

16. Fracture of olecranon.

17. Monteggia fracture dislocation.

III. INFECTIONS

Diagnosis and Principles of Management

1. Osteomyelitis : pyogenic, tubercular; fungal (Madurafoot).
2. Arthritis : septic and tubercular.
3. Tuberculosis of the spine.
4. Leprosy – principles of corrective surgery.

IV. TUMOURS

Diagnosis and Principles of Management

1. Benign lesions : Multiple exostosis, Enchondroma, Osteoid osteoma, Simple bone syst, Osteochondroma.

2. Malignant lesions : Osteosarcoma, Ewing's sarcoma, Giant cell tumor, Chondrosarcoma and Secondary deposits.

V. DEGENERATIVE DISEASES

Diagnosis and Principles of Management

1. Osteoarthritis.
2. Spondylosis.
3. Degenerative disc diseases.

VI. CONGENITAL ANOMALIES

Diagnosis and Principles of Management

1. Congenital dislocation hip.
2. Congenital talipes equinovarus.
3. Pes Planus.

VII. BONE DYSPLASIA

Diagnosis and Principles of Management

1. Osteogenesis imperfecta.

VIII. NEURO-MUSCULAR DISORDERS

Diagnosis and Principles of Management

1. Post polio residual Paralysis.
2. Cerebral palsy.

IX. OSTEOCHONDROSES

Diagnosis and Principles of Management

1. Perthe's disease.

X. DEFORMITIES

1. Scoliosis – diagnosis and referral.

2. Genu Varum and Valgum diagnosis.

XI. BASIC PRINCIPLES OF PHYSIOTHERAPY OCCUPATIONAL THERAPY AND ORTHOTICS/ PROSTHETICS

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination in adults and children including neonates.

2. Arrive at a logical working diagnosis after examination.

3. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments.

4. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

5. Be able to do surface marking of common superficial arteries, veins, nerves and viscera.

6. Interpret skiagrams of common fractures and dislocations.

7. Apply skin traction.

8. Apply figure of 8 bandage for fracture clavicle.

9. Apply POP slabs/casts and splints.

10. Transport safely victims of accidents including those with spinal injury.

11. Reduce colle's fracture.

12. Reduce shoulder dislocation.

13. Reduce tempero-mandibular joint dislocation.

14. Perform nerve blocks like infiltration, digital, pudendal, paracervical and field block.

OPHTHALMOLOGY

Departmental Objectives :

At the end of training in the subject of ophthalmology, a MBBS student should be able to :

Identify the abnormal conditions of the eye.

Diagnose various eye diseases which are most prevalent in the country.

Manage various eye conditions like conjunctivitis, stye, chalazion and foreign body.

Recognise and give medical treatment of anterior segment diseases.

Identify the national objectives and be an active participant in the National Programme for Control of Prevention of Blindness.

Course Contents

1. Etiology, clinical features and treatment of conjunctival infections, allergies, pterygium, xerosis and trachoma.

2. Etiology, clinical features, complications and treatment of corneal ulcers, keratomalacia and other scleral and corneal inflammations.

3. Basic principles of keratoplasty, eye donation and corneal blindness.

4. Etiopathogenesis and complications of ectropion, entropion, ptosis, lagophthalmos, symblepharon and lid inflammations.

5. Etiology, clinical features and treatment of lacrimal sac infections and causes of epiphora.

6. Classification, clinical features, diagnosis and treatment of various forms of cataract – senile, congenital, complicated, traumatic, diabetic, secondary.

7. Classification, etiology, clinical features, complications and management of various forms of uveitis.

8. Classification, etiology, clinical features and management of various glaucomas – congenital, angle closure, open angle, secondary.

9. Differential diagnosis of 'Red eye'.

10. Classification, clinical features and treatment of various refractive errors and presbyopia.

11. Types of ocular trauma, clinical features, complications and management including sympathetic ophthalmia.

12. Etiology, clinical features and management of optic nerve disorders including differentiation of papilloedema and optic neuritis.

13. Etiology, clinical features, and management of orbital diseases; common causes of proptosis.

14. Ocular manifestation of systemic diseasesincluding diabetes, hypertension, tuberculosis, leprosy, anaemia, and pregnancy induced hypertension.

15. Types of blindness and their causes.

16. Ocular side effects of systemic drugs.

17. Objectives of National Programmes of Prevention and Control of Blindness and Trachoma Control Programme.

18. Etiology, clinical features and treatment of common retinal disorders including vascular occlusions, inflammation and detachment.

19. Etiology, clinical features and principles of treatment of vitreous diseases e.g. haemorrhage, degeneration, liquifaction, endophthalmitis.

20. Differentiate senile cataract and Open Angle Glaucoma.

21. Ocular manifestations of common neurological disorders.

22. Etiology, symptoms, diagnosis and principles of treatment of strabismus.

23. Recent advances in ophthalmology – types and scope of lasers, intraocular lens implantation.

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Skills

1. Record visual acuity.
2. Take conjunctival swab.
3. Use of ophthalmoscope.
4. Examine anterior segment of eye.
5. Remove extraocular foreign body.
6. Perform epilation of cilia.
7. Incise and drain lid abscess.
8. Distant direct ophthalmoscopy for diagnosis of cataract.

OTORHINOLARYNGOLOGY

Departmenta Objectives :

At the end of the course, the student will be able to :

Describe the basic pathophysiology of common ENT diseases and emergencies.

Adopt the rational use of commonly used drugs, keeping in mind their adverse reactions.

Suggest common investigative procedures and their interpretations.

Course Contents

I. EAR

General Principle

1. Bacterial flora, specific antibiotic therapy of upper respiratory infection.

2. Surgical anatomy : external, middle and inner ear.

3. Physiology of hearing and vestibular function.

4. Examination of the Ear : Tuning fork tests; hearing assessment in children – broad outline; referred pain in the ear.

5. Deafness : types and causes.

6. Diseases of the external ear; perichondritis; otitis externa; cerumen; foreign body.

7. Diseases of middle ear : acute and chronic suppurative otitis media; chronic suppurative otitis media; Otosclerosis; Cholesteatoma.

8. Audiometry – pure tone; functional examination of inner ear, vestibule, caloric test, positional nystagmus test.

9. Deaf mutism.

10. Meniere's disease.

11. Complications of otitis media: Mastoiditis (acute and chronic); lateral thrombosis; labyrinthitis; otogenic brain abscess; mastoidectomy – Principles.

II. THE NOSE AND PARANASAL SINUSES

1. Surgical anatomy and physiology of the nose and paranasal sinuses.

2. Symptoms of nasal diseases.

3. Methods of examination of nose and paranasal sinuses.

4. Diseases of nasal septum : Deviation of nasal septum and principles of management; polyp of the septum.

5. Epistasix and foreign bodies in nose.

6. Nasal allergy – nasal polyposis.

7. Inflammation of the nose : Furunculosis of vestibule of the nose, acute rhinitis.

8. Inflammatory diseases of paranasal sinuses : Acute and chronic maxillary sinusitis.

9. Atrophic rhinitis, rhinosporidiosis, rhinoscleroma.

10. Outline of management of benign and malignant tumors of nose and paranasal sinuses.

III. PHARYNX

1. Anatomy of the pharynx – methods of examination.

2. Diseases of the pharynx : Adenoids; acute and chronic pharyngitis; diphtheric pharyngitis; acute follicular tonsilitis and differential diagnosis; chronic tonsilitis; tonsilectomy - indication; peritonsillar abscess; retropharyngeal abscess.

3. Broad outline of management of juvenile angiofibroma, and malignant tumors of oropharynx.

IV. LARYNX

1. Anatomy and functions of the larynx and methods of examination.

2. Hoarseness of voice; Stridor : differential diagnosis of respiratory obstruction and its management.

3. Inflammatory lesions of the larynx : acute laryngitis.

4. Vocal cord nodules; laryngeal diphtheria; tuberculosis of the larynx and differential diagnosis.

5. Benign and malignant tumors of larynx : classification.

Skills

1. Be able to use auroscope, nasal speculum, tongue depressor, tuning fork and head mirror.

2. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.

3. Maintain airway (endotracheal intubation / tracheostomy/ cricothyroidostomy).

4. Perform syringing of ear.

5. Do nasal packing for epistaxis.

Obstetrics and Gynaecology

Departmental Objectives :

At the end of training in Obstetrics & Gynaecology, the M.B.B.S. student will be able to :

Appreciate the socio-cultural, economic and demographic factors that influence the practice of Obstetrics & Gynaecology.

Appreciate the principles of reproductive anatomy and physiology.

Understand the preconception, antenatal, intranatal and postnatal factors including drugs that affect the mother and foetus.

Recognise the changes and adaptation that occur in the mother during pregnancy, labour and puerperium.

Impart antenatal care, detect deviations from normal pregnancy and refer risk cases appropriately.

Manage normal labour, recognise the factors that may lead to complications and refer such cases appropriately.

Institute primary treatment in Obstetrics & Gynaecological emergencies.

Resuscitate and take adequate care of the newborn.

Assist couples with infertility and those requiring contraception.

Know the aetiopathology and management of menstrual abnormalities.

Know about the benign and malignant tumors of the genital tract and appreciate the need for screening and prevention.

Recognise the importance of infections and other diseases of the genital tract.

Know about the displacements of genital tract and injuries.

Understand the implications of medicolegal and ethical issues concerning the speciality.

Acquire communication, decision making and managerial skills.

Acquire skills to perform Obstetrical & Gynaecological examinations and certain minor investigations and therapeutic operative procedures.

Course Contents

Obstetrics

I. OBSTETRICS : BROADER PERSPECTIVES

1. Vital statistics, birthrate, maternal mortality, perinatal and neonatal mortality, live birth, still birth, abortion, period of viability including definitions of all above.

II. ANATOMY OF THE FEMALE REPRODUCTIVE TRACT

1. Basic Anatomy :

Relationship to other pelvic organs. Applied Anatomy as related to Obstetrics and Gynaecological surgery.

III. PHYSIOLOGY OF CONCEPTION

1. Ovulation, menstruation, fertilisation and implantation.

2. Gametogenesis.

IV. DEVELOPMENT OF FOETUS AND PLACENTA

1. Basic embryology, factors influencing foetal growth and development; anatomy of placenta.

2. Teratogenesis, placental barrier.

V. DIAGNOSIS OF PREGNANCY

1. Clinical features; differential diagnosis; principles underlying the pregnancy tests.

2. Immunological tests and their interpretation; ultrasonogram.

VI. MATERNAL CHANGES IN PREGNANCY

1. Genital tract, cardiovascular system and Haematology.

2. Respiratory and gastrointestinal system.

VII. ANTENATAL CARE

1. Objectives of antenatal care; assessment of period of gestation; detect abnormality with the help of gravidogram; clinical monitoring of maternal and foetal well-being; detect normal foetal pelvic relation (obstetrical palpation); advise regarding nutrition; prescribing in pregnancy; immunisation against tetanus; basic investigations.

2. Foetal well-being; biophysical monitoring; pelvic assessment.

VIII. COMPLICATIONS OF EARLY PREGNANCY

1. **Abortions : Definition, Types, Causes.**

Management of incomplete, inevitable abortion.

2. **Ectopic Pregnancy**

Clinical features; differential diagnosis of acute abdomen; principles of surgical management.

3. Causes and conservative management of ectopic pregnancy.

Hyperemesis Gravidarum

4. Impact on maternal and foetal health; principles of management.

5. Aetiopathology.

Gestational Trophoblastic Tumours

6. Clinical features; differential diagnosis; principles of management; follow up.

7. Laboratory investigations and ultrasonography.

IX. ANTEPARTUM HAEMORRHAGE

1. Classification; clinical features; differential diagnosis; principles of management.

2. Aetiopathology; ultrasonography; complications and management.

X. ABNORMAL PRESENTATIONS AND CONTRACTED PELVIS

1. Causes, salient features; principles of management of occipito-posterior, face and brow presentation; obstructed labour : definition; clinical features; prevention; mechanism of breech delivery.

XI. MULTIPLE PREGNANCIES

1. Clinical features; diagnosis and complications; principles of management; investigations.

2. Causes; management.

XII. PREGNANCY INDUCED HYPERTENSION

1. Definition; early detection; investigations; principles of management of pregnancy induced hypertension and eclampsia.

2. Aetiopathology; differential diagnosis of convulsions in pregnancy; complications of eclampsia.

XIII. ANAEMIA IN PREGNANCY

1. Aetiology; classification; diagnosis; investigations; adverse effects on the mother and foetus; management during pregnancy and labour.

XIV. OTHER MEDICAL DISORDERS LIKE HEART DISEASE/DIABETES MELLITUS AND URINARY TRACT INFECTION

1. Clinical features; early detection; effect of pregnancy on the disease and impact of the disease on pregnancy.

2. Complications of the diseases.

XV. NORMAL LABOUR

1. Physiology; mechanism in occipito-anterior presentation; monitoring – Partogram; conduct of labour; pain relief.

XVI. MANAGEMENT OF THIRD STAGE OF LABOUR

1. Complications; predisposing factors; prevention; management of atonic PPH and management of injuries to the lower genital tract.

XVII. UTERINE DYSFUNCTION

1. Classification; recognition of uterine dysfunction; principles of induction and acceleration of labour.

XVIII. FOETAL DISTRESS AND FOETAL DEATH

1. Clinical features; causes; diagnosis; principles of management; prevention.

XIX. HAEMOLYTIC DISEASE INCLUDING RH ISO IMMUNISATION

1. Mechanism; Prophylaxis; foetal complications.

XX. PUERPERIUM

1. Physiology; clinical features; complications : recognition and principles of management; prevention of puerperal sepsis.

XXI. BREAST FEEDING

1. Physiology of lactation; care of breasts; counselling; regarding breast feeding, mastitis and breast abscess.

XXII. CARE OF NEWBORN

1. Assessment of maturity; detect asphyxia; principles of resuscitation; common problems.

XXIII. MEDICAL TERMINATION OF PREGNANCY

1. Legal aspects; indications; methods; complications.

2. Management of complications.

XXIV. CONTRACEPTION

1. Various methods and devices; selection of patients; counselling of couples; side effects; failures and complications.

XXV. OPERATIVE OBSTETRICS

1. Indications; technique and complications for episiotomy, vacuum extraction; low forceps; instrumental evacuation; menstrual regulation. Indications and steps of operation; Caesarean section; assisted breech delivery; external cephalic version; cervical cerclage; intra-amniotic instillation.

XXVI. POST-CAESAREAN PREGNANCY

1. Risks; identification of scar dehiscence.

Gynaecology

I. PHYSIOLOGICAL VAGINAL DISCHARGE

1. Clinical characteristics.

II. PATHOLOGICAL VAGINAL DISCHARGE

1. Aetiology; characteristics; clinical recognition; investigation; treatment of common causes; genital hygiene.

III. ABNORMAL & EXCESSIVE MENSTRUAL BLEEDING

1. Definitions; classification of causes; clinical features; principles of investigation; diagnosis and management.

IV. AMENORRHOEA

1. Causes; principles of management.

V. DYSFUNCTIONAL UTERINE BLEEDING

1. Aetiopathology; classification; clinical aspects and diagnosis; principles of investigation and management.

2. Hormone therapy; management options.

VI. FERTILITY AND INFERTILITY

1. Causes in male and female; Physical examination of both female and male partners; essential investigations and interpretation.

2. Management options; principles of Medically Assisted Reproductive Technology (MART).

VII. ENDOMETRIOSIS & ALLIED STATES

1. Aetiopathology; clinical features; principles of investigation and management.

2. Implications on health and fertility.

VIII. GENITAL INJURIES & FISTULAE

1. Causes; prevention; clinical features; principles of management.

IX. GENITAL INFECTIONS INCLUDING STD, AIDS & PELVIC TUBERCULOSIS, INFECTIONS AFFECTING INDIVIDUAL ORGANS

1. Aetiology; Pathology; clinical features; differential diagnosis; principles of basic investigation;and medical therapy.

2. Long term implications; surgical management.

X. DISPLACEMENTS OF UTERUS – GENITAL PROLAPSE

1. Aetiology; clinical features; diagnosis; principles of management; preventive aspects.

XI. BENIGN TUMOURS OF PELVIC ORGANS – CERVICAL, UTERINE, OVARIAN

1. Aetiopathology; clinical features; differential diagnosis; principles of management.

XII. MALIGNANCY OF GENITAL TRACT

1. Aetiopathology; clinical features; screening procedures; investigations; diagnosis; principles of management.

2. Epidemiological aspects; management options.

XIII. OPERATIVE GYNAECOLOGY

1. Indications; technique and complications: Dilatation and Curettage (D&C); Fractional curettage; cervical biopsy; indication and steps of abdominal hysterectomy; surgery for ovarian tumours, vaginal surgery for utero-vaginal prolapse.

2. Laparoscopy; colposcopy; hysteroscopy; management of postoperative complications.

Skills

1. Obtain a proper relevant history, and perform a humane and thorough clinical examination including internal examinations (per-rectal and per-vaginal) in adults and children.

2. Arrive at a logical working diagnosis after examination.

3. Order appropriate investigations keeping in mind their relevance (need based) and cost effectiveness.

4. Plan and institute a line of treatment which is need based, cost effective and appropriate for common ailments taking into consideration:

   a. Patient.

   b. Disease.

   c. Socio-economic status.

   d. Institutional/governmental guidelines.

5. Recognise situations which call for urgent or early treatment at secondary and tertiary centres and make a prompt referral of such patients after giving first aid or emergency treatment.

6. Demonstrate interpersonal and communication skills befitting a physician in order to discuss the illness and its outcome with patient and family.

7. Determine gestational age.

8. Maintain an ethical behaviour in all aspects of medical practice.

9. Obtain informed consent for any examination/procedure.

10. Motivate colleagues, community and patients to participate actively in national health programmes.

11. Write a complete case record with all necessary details.

12. Write a proper discharge summary with all relevant information.

13. Write a proper referral note to secondary or tertiary centres or to other physicians with all necessary details.

14. Assess the need for and issue proper medical certificates to patients for various purposes.

15. Organise antenatal, postnatal, well-baby and other clinics.

16. Plan and manage health camps such as family welfare camp.

17. Adopt universal precautions for self protection against HIV and hepatitis and counsel pateints.

18. Do and examine a wet film of vaginal smear for Trichomonas and fungus.

19. Take a pap smear.

20. Take punch biopsy of cervix.

21. Conduct normal vaginal delivery.

22. Do artificial rupture of membranes.

23. Perform and suture episiotomies.

24. Apply outlet forceps.

25. Do post partum tubectomy.

26. Perform MTP in the first trimester and be able to do evacuation in incomplete abortion.

27. Insert and remove IUCD.

28. Be able to diagnose and provide emergency management of antepartum and postpartum haemorrhage.

TOPICS FOR INTEGRATED TEACHING

1. Family Planning.
2. Embryology - integrated foetal growth and development.
3. Acute abdomen.
4. Care of newborn.
5. Prescribing in pregnancy.
6. Nutrition & Anaemia in pregnancy.
7. Physiological changes.
8. Neonatal resuscitation problems.

Section - III

We present in this section, a breif note on the modular approach to the curriculum design initiated by the consortium institutes. An outline of thirteen integrated teaching modules on thrust areas is given. What is presented is only a plan and further details need to be worked out in implementing these modules.

Modular Approach to Curriculum Design

One of the major deficiencies found during the course of inquiry conducted by the consortium institutions was lack of **holistic approach** to the training. Several important topics were dealt by several departments ranging from basic sciences to clinical, during training, thus making it difficult for the students to comprehend the concepts and apply the basic science elements with their clinical correlates. This deficiency is attributed mainly to the departmental structures of the medical institutions with least degree of coordination amongst various disciplines.

The present model of medical education is a carry over from nineteenth century. During that time, the student enrollment was limited and direct contact between patient, teacher and student provided a natural source of integration so that student could assimilate, analyze and synthesize the information provided.

The twentieth century witnessed a phenomenal change as a result, the universities became factories, new super specialities appeared, the scientific information multiplied by leaps and bound, thus taking away from teaching, the natural source of integration.

Subjects are dealt with separately and often conflictingly by Anatomists, Physiologists, Biochemists, Pathologists, Microbiologists, Physician, Surgeon, Pharmacologist, Medico-legal expert, Community Medicine specialist and others. Each tackles the subject only from the standpoint of his speciality, making no attempt to synthesize information. A student listens, repeats, forgets and waits for the next lecture on the subject, which has no logical sequence. Finally he is left confused by the 'fragments' of the subject presented to him. In short, a student is forced to regard the medical education as a ritual which he has to endure in order to get the M.B.B.S. Degree.

What is a Modular Approach?

Modular approach to teaching is in response to the need for re-organizing the curriculum to make it more systematic, sequential, and holistic. It recognizes the principle that the teaching of M.B.B.S. is not a Departmental affair; It is an Institutional function.

A module is a short course of study, especially, vocational or technical subject, that together with other such completed courses can count towards a particular qualification. Modular teaching has replaced the older expression of integrated teaching in that it denotes a process which combines various activities normally carried out at different locations in time and space.

The objective of modular teaching is co-ordination of different learning activities to ensure harmonious functioning leading to greater efficiency.

Some of the advantages of a modular approach are as follows :

- synthesized presentation
- removal of pointless repetition
- presentation in a logical order
- reduction of non-essential details
- improvement in quality of teaching
- improvement in relation between departments

Teaching Methodology in Modular Approach

Modular approach makes use of a variety of methods for both theoretical and practical instructions:

Theoretical Instructions

- Collective information through didactic teaching: but restricted to those information not contained in a text book.
- Small group discussion.

- tutorials.
- case study.
- patient demonstration.
- Clinico-pathology & other similar sessions.

Practical Instructions

- Joint clinical practice: combining clinician, epidemiologist, basic scientist and others.
- Laboratory Exercises : preferably to be conducted in multidisciplinary laboratories. This enables a fixed working base, saving of space and equipment, and is found to be more effective.

Why this Concept?

The Department of Microbiology at AIIMS recognized that the teaching of the subject was isolated and that there was a need to change it in order to render it more effective and meaningful. Diseases like tuberculosis, malaria, filaria, leprosy, kalaazar, meningitis, diarrhoea, respiratory infections, tetanus, diphtheria, measles, to name but a few, are rampant in our country, as also in most third world countries. The teaching of these diseases suffers from the major drawback of being disjointed and irrelevant.

A nation wide survey involving 402 medical students was carried out to elicit responses on microbiology teaching. Salient features of student's responses were that teaching is irrelevant ; details about microbes are taught in isolation with no reference to clinical relevance; and that many useless details are taught and examined. Hence it was felt that modular approach to teaching of infectious diseases should be followed instead of conventional subject centered teaching of microbiology.

A group of faculty members from the departments of microbiology, medicine, pediatrics, surgery, obst. gynecology, community medicine, pathology, and pharmacology alongwith educationist identified eight

intermediate objectives for teaching of infectious diseases (see annexure) and identified various units for preparing modules. For each unit identified, details of teaching learning activities were drawn out and evaluation methods evolved.

General Guidelines for introducing modular curriculum

Steps to be followed :

- Appoint a core curriculum committee
- Define institutional objectives and get approval
- Define curriculum units (modules) and their sequence of introduction
- Appoint a Committee for each unit define intermediate objectives
- Define instructional objectives for each unit
- Draw details of learning activities
- Lay down evaluation methods.

Core Curriculum Committee may consist of departments of Community Medicine, Pediatrics, Medicine, Orthopedics, Obst. Gynae, Psychiatry, Surgery, ENT, Ophthalmology, and Dental. These are to be assisted by other departments viz., Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Lab. Medicine, Pharmacology, Anesthesiology, Cardiology, Endocrinology, Neurology, Gastroenterology, Radiology, Dermatology, etc.

Suggested outline for modular teaching of MBBS course:

First Year: Introduction and Priming

Structure and Function of human body, Pathology, Microbiology, Pharmacology, Immunology, Medical Statistics, Behavioural and Social Sciences.

- Early Exposure to Clinical Practice

2nd - 4th Year: Units of Modular Teaching may be introduced:

Infectious Diseases, Trauma.....

Final Year:

The last 6 months of the fifth year may involve only clinical training.

Clinical Clerkship (Internship)

This should be in the form of a Project (Problem oriented)

The course should end with a Final summative assessment.

Intermediate Objectives (Infectious diseases) :

Students should be able to:

1. Diagnose common infectious diseases with the help of signs and symptoms and appropriate laboratory investigations.

2. Suggest and institute appropriate therapy for these diseases, which include supportive therapy, choice of chemotherapeutic agents and other measures like serum therapy wherever applicable.

3. Advice the family members about the expectations on the outcome of disease, and the steps to be taken for protecting those who are exposed to the patients.

4. Monitor the environment such as air, water, food, mosquitoes and other vectors with the help of public health laboratories, for preventing the occurrence of infectious diseases.

5. Take prompt action to control an epidemic of infectious disease by appropriate measures.

6. Institute and advice about the preventive measures, including vaccination, which may be necessary against common infectious diseases in a community as well as hospital setting.

7. Organize and deliver programmes related to health education for prevention of infectious diseases at the level of an individual, group and community.

8. Continue to learn about new and significant progress in the subject that takes place from time to time which had direct bearing on the performance of the above tasks.

HIV / AIDS

(AIIMS, New Delhi)

Objectives :

At the end of the Unit, the student should be able to :

1. State the importance and magnitude of HIV infection/AIDS as a worldwide health problem and discuss the emerging implications for the health situation in India.

2. Outline the current extent of the problem of HIV infection/AIDS in our country and future projections.

3. Enumerate the unique characteristics of HIV infection and AIDS.

4. Explain the epidemiological features of HIV/AIDS (reservoirs and routes of infection, transmission of infection, high risk behaviours for HIV infection and the modes/situations through which the infection **does not** spread.)

5. Describe the important characteristics of HIV as regards its structure, infectivity and susceptibility to physical and chemical agents.

6. Discuss the clinical course of an individual who acquires HIV and role of asymptomatic carriers in transmission of HIV infection.

7. Describe the pathological changes in the immunological, haematological and other systems in HIV infection/AIDS.

8. Describe the major manifestations of symptomatic states of HIV infection.

9. Suspect HIV infection/AIDS in relevant clinical situations, elicit abnormal findings and take appropriate steps for management.

10. Recognise and manage common infective complications in clinical manifestations of HIV infection and AIDS.

11. Recognise opportunistic infections and malignancies in a case of clinical HIV disease and take appropriate steps for further management.

12. Understand and practice universal precautions while caring for patients.

13. Plan screening and confirmatory tests to be done in a suspected carrier/case and interpret their results.

14. Counsel regarding HIV/AIDS to groups of people in different situations such as:

- an asymptomatic carrier
- a symptomatic case with AIDS
- parents of a child born to HIV +ve mother (regarding breast feeding, immunization, other care)
- other family members/friends of a case/carrier
- a symptomatic case of ARC
- spouse of a case/carrier

15. Explain and impart health education about the preventive aspects of HIV/AIDS to persons, groups and community.

16. Discuss the effects of HIV infections on the foetus and newborn, describe the clinical course of a neonate born to HIV +ve mother and outline the plan of investigations in such a child.

17. Describe the salient features of National AIDS Control programme.

18. Discuss the current status of drug therapy and be aware of potential vaccines for HIV/AIDS.

TEACHING LEARNING ACTIVITIES

Objectives	Content	Method	Hours	Departments
1 to 4	Epidemiology of HIV/AIDS.	Lecture	1	Community Medicine
5 to 8	Pathogenesis and clinical features.	Seminar	2	Medicine, Paediatrics, Microbiology, Pathology
9,10,11, 13,16	Clinical and laboratory diagnosis.	Seminar	2	Medicine Microbiology, Paediatrics
9, 10, 11, 16, 18	Manangement	Seminar	2	Medicine, Paediatrics, Community Medicine, Pharmacology
12,14,15, 17,18	Prevention and Control.	Seminar	2	Community Medicine, Microbiology, Surgery
—	—	Case studies	1	Medicine, Paediatrics, Pathology.
		Total hours	10	

SUGGESTED ASSESSMENT STRATEGIES

Objective	Suggested test
1	MEQ
2	MEQ
3	SAQ
4	MCQ
5	MCQ/SAQ
6	MCQ, SAQ
7	MCQ
8	MEQ
9 to 11	MCQ/PSE
12	MCQ
13	MCQ
14	OSCE/Viva-voce
15	OSCE/Viva-voce
16	MCQ/SAQ
17	MEQ
18	MCQ

MCQ = Multiple Choice Questions
PSE = Problem Ssolving Exercises
MEQ = Modified Essay Question
SAQ = Short Answer Questions
OSCE = Objective Structured Clinical Examination.

TUBERCULOSIS

(AIIMS, New Delhi)

Objectives :

At the end of the unit, the MBBS student should be able to :

1. State the importance of tuberculosis as major health problem of the country and state the magnitude thereof. (LC ; B)

2. Outline the importance of the host, the environment and the agent factors in the epidemiology of tuberculosis. (LC ; A)

3. State common characteristics of Mycobacteria which differentiate it from all other groups of bacteria. (LC ; A)

4. Enumerate all Mycobacteria capable of causing disease in man and place them into respective recognized groups of classification. (LC ; B)

5. Indicate major differences between these Mycobacteria. (LC ; B)

6. Perform Zeihl Nielsen staining (ZNS) on a sputum sample and identify the AFB on bright ground microscopy. (Psy. ; A)

7. Demonstrate familiarity with relevant laboratory procedures other than ZNS for the isolation, identification and antibiotic susceptibility of M. tuberculosis. (LC ; A)

8. Describe the mode of infection, pathogenesis, virulence, role of induced hypersensitivity immunity and genesis of granulomatous reaction in tuberculosis. (LC ; A)

9. List common symptoms, elicit important signs and make clinical diagnosis of pulmonary and extrapulmonary (disseminated, TBM, abdominal, genitourinary, bone and joints, lymphadenopathy) infections in children and adults. (LC ; A)

10. Enumerate differences in the clinical presentation of and recognize the development and morphology (gross and microscopic) of primary, progressive primary, miliary, disseminated, fibrocalcific tuberculosis in lungs and various other organs in immunocompetent and immunocompromized host. (HC ; A)

11. Plan investigations (including micro, path, biochemical, radiologic and Mantoux) in a suspected patient. (HC ; A)

12. Choose the appropriate samples to be collected at various stages of illness and from different sites, for making a laboratory diagnosis. (LC ; A)

13. Carry out a Mantoux test and correctly interpret the result of the test, on a child, (Psy. ; A)

14. Interpret the following specific investigations in the context of tuberculosis infection: (HC ; A)

* AFB staining

* Mantoux test

* CSF : Cells, biochemistry, culture, serology

* Pleural fluid : Gross, microscopic, biochemical, cytology, ZN stain.

15. Describe the radiological features of pulmonary and extrapulmonary infection and interpret chest X-ray for presence of primary, progressive primary, miliary and fibrocalcific lesions. (LC ; A)

16. Describe antitubercular therapy in the following

forms of tuberculosis in children and adults giving dose formulation and duration of therapy: (LC ; A)

* pulmonary
* tuberculin positive school child
* TBM
* adenopathy
* miliary
* disseminated
* bone and joint
* genitourinary

17. Advice adjunct and supportive management to a case. (HC ; A)

18. Recognize cases of tuberculosis which, on the basis of complications/complexity, require opinion of a specialist, or referral to a higher level of care. (HC ; A)

19. Plan investigations of the patient if there is no satisfactory improvement after six months of treatment. (HC ; A)

20. Advice the patient about appropriate steps if the laboratory report indicates isolation of Mycobacteria other than tubercle (MOTT) bacilli. (HC ; B)

21. Analyse the impact of the disease on the individual, the family and social and occupational life and advice measures to ameliorate. (HC ; A)

22. Advice regarding BCG vaccination to a child, administer the vaccine and interpret the take response of the vaccine. (Psy. ; A)

23. Institute management of a pregnant lady, lactating lady as well as a neonate born to such a mother. (HC ; B)

24. Describe the salient features of the National Tuberculosis Control Programme. (LC ; A)

25. Describe the role of medical officer of a P.H.C. in the implementation of the NTP. (LC ; A)

LC = Lower Cognitive Objective
HC = Higher Cognitive Objective
Psy = Psychomotor Objective
A = What Student Must Know
B = What is Good to Know

TEACHING LEARNING ACTIVITIES

Objective	Time	Title	Method	Departments
Day 1				
—	09.00 to 09.30	Questionnaire	—	—
—	09.30 to 10.00	Objectives of workshops	—	—
1	10.00 to 10.30	Magnitude of the problem	Lecture	Medicine
3 to 5	11.00 to 12.00	Genus Mycobacteria	Lecture	Microbiology
8	12.00 to 13.00	Pathogenesis of tuberculosis	Lecture	Pathology
10	14.00 to 18.00	Gross & microscopic pathology	Practical	Pathology
Day 2				
9,10	09.00 to 10.30	Clinical presentation	Seminar	Med, Surg, Paed, Obst & Gynae
15	10.30 to 11.30	Radiological features	Small group	Radiology
13,22	12.00 to 13.00	BCG & mantoux testing	Small group	Paediatrics, Community Medicine
6	14.00 to 18.00	Zeihl Nielsen staining	Practical	Microbiology
Day 3				
2,24,25	0.900 to 10.00	Public health	Lecture	Community Medicine
7,11,12 & 14	10.00 to 11.30	Laboratory diagnosis	Seminar	Med, Path, Micro, Radiology
16 to 21, 23	12.00 to 13.30	Medical management	Seminar	Medicine, Paediatrics, Pharmacology
16 to 21, 23	14.30 to 18.30	Surgical management	Seminar	Surg. Obst & Gynae, Ortho, Comm Med
Day 4				
1,2,9	09.30 to 13.00	Visit to TB hospital	Small group	TB hospital staff, Medicine, Surgery, Paediatrics, Community Medicine

Objective	Time	Title	Method	Departments
13,22	14.00 to 15.00	Mantoux test reading	Snall group	Paediatrics, Community Medicine
	15.00 to 18.00	Case studies	Small group	Med, Paed, Surg, Ortho, Path
Day 5				
1,2,24,25	09.30 to 11.30	Clinico-psycho-social case review	Small group	Community Medicine
	11.30 to 13.30	Case studies	Small group	Med, Paed, Surg, Ortho, Path
	15.00	Valedictory & post-workshop questionnaire		

SUGGESTED ASSESSMENT STRATEGIES

Objective	Suggested	Objective	Suggested test
1	MCQ	13	Practical
2	SAQ	14	Viva-voce
3	MCQ	15	Viva-voce and MCQ
4	MCQ & SAQ	16	MCQ & SAQ
5	MCQ	17	SAQ
6	Practical	18	SAQ
7	MCQ	19	SAQ
8	MCQ & SAQ	20	MCQ
9	Bedside case presentation	21	CPSCR
10	Case study, practical viva-voce and specimen identification	22 23	Practical SAQ
11	MCQ	24	ESSAY
12	MCQ	25	ESSAY

MCQ = Multiple Choice Questions
SAQ = Short Answer Questions
CPSCR = Clinico-Psychosocial Case Review

Acute Rheumatic Fever

(Christian Medical College, Vellore)

Objectives : (Must Know)

At the end of the unit, the MBBS student should be able to :

1. State the magnitude of acute rheumatic fever (ARF) as a major problem in India, vis-a-vis tuberculosis, diarrhoea, leprosy and other infectious diseases of national importance. (HC)

2. Describe the major and minor components of Modified Jones Criteria for the diagnosis of ARF. (HC)

3. Elicit the above signs in a patient with ARF and make a diagnosis of ARF. (PS)

4. State the common biological and physiological characters of group A streptococci (GAS) and thereby differentiate it from other streptococci. (HC)

5. Outline the mechanisms of pathogenesis of and gross and microscopic histopathological changes in ARF. (LC)

6. List the later complications of ARF such as RHD and rheumatic valvulitis. (HC)

7. Elicit clinical signs in a patient with RHD/ rheumatic valvulitis and make a clinical diagnosis based on them. (PS)

8. List the laboratory methods in the diagnosis of ARF/RHD. (HC)

9. Plan investigations and choose appropriate clinical samples for the laboratory diagnosis of ARF/RHD. (HC)

10. Collect throat cultures and blood samples for the laboratory diagnosis of ARF/RHD. (PS)

11. List methods of primary and secondary penicillin prophylaxis for the treatment and control of ARF/RHD. (HC)

12. Implement primary and secondary prophylaxis in patients with ARF/RHD for their treatment and control. (PS)

13. List strategies for the surgical intervention for rheumatic valvulitis. (HC)

14. List methods to health-educate the community about the nature of the etiological agent, its transmission and need for the treatment of primary streptococcal infections and their sequelae. (HC)

Learning objectives : (Good to Know)

15. Outline the factors related to the environment that will increase the prevalence and incidence of ARF in community. (HC)

16. List the virulence and other characters of GAS that are involved in the pathogenesis of ARF/RHD. (LC)

17. Interpret the results of the various laboratory tests done for the confirmation of clinical diagnosis. (HC)

18. List the methods to determine the prevalence and incidence of ARF/RHD in a community. (LC)

19. Familiarise with measures to control and prevent ARF/RHD in a community of children at a national level. (LC)

TEACHING - LEARNING SCHEDULE

Content	Method	Hours	Departments	Objectives
Introduction to ARF/RHD:				
The Disease	L	1	Med.	1,2,3,6,7,9, 10,11,13
Streptococcus	L	2	Micro.	4,5,6,8,10, 16,17
Streptococcus	P	2	Micro.	8,9,10,16,17
Pathology & Pathogenesis	L	1	Path.	5,8,9,16.
Gross & Microscopic pathology	P	2	Path.	5,8,9,16
Clinical Presentation & management	L	1	Card.	2,3,6,7,9, 10,11,13
Case Study I	SGD	2	Med/Card	—Do—
Case Study II	SGD	2	Med/Card.	—Do—
Prophylaxis	L	1	Pharm.	11
Epidemiology	L/D	2	Comm. Health	1,11,12,14, 15,18,19

L = Lecture (6 Hrs.)
P = Practicals (4 Hrs.)
SGD = Small Group Discussions (4 Hrs.)
L/D = Lecture Demonstration (2 Hrs.)

Seminar by students: "Acute Rheumatic Fever: Present and Future Strategies for control & prevention in India".

EVALUATION SYSTEM

Type of Evaluation	Marks	Time	Objectives
Multiple Choice Questions (MLQ)	30	30 mins	4,8,9,11, 16,17,18.
Short Questions (SAQ) (6 to 8)	30	60 mins.	1,2,5,6,9, 11,12,14.
Practicals + Orals	50	60 mins	6,8,9,10,17.
Case study + Orals	50	60 mins.	1,2,3,6,7,8,9.

ENTERIC FEVER

(Christian Medical College, Vellore)

General Objectives :

The students should be able to :

Define the magnitude of the problem of enteric fever in India

Make a provisional clinical diagnosis of enteric fever.

State the aetiologic agents of enteric fever in India.

Request for laboratory investigations which will help to confirm the diagnosis.

Interpret results of above investigations and confirm the identification of the aetiologic agent.

Suggest and institute appropriate therapy for the disease which includes non-pharmacological and pharmacological therapy and choice of drugs.

Observe patient for any signs of complications of typhoid fever.

Monitor the side effects of therapy.

Advise the family about prophylaxis of enteric fever, so that contacts can be protected.

Advise the family about emphasis on cleanliness to prevent food and water borne disease in general, and enteric fever in particular.

Learning Objectives : (Must Know)

1. Define the magnitude of the problem of enteric fever in India.

2. Define the symptoms of enteric fever.

a. pattern of fever

b. periodicity, if any

c. Associated GI symptoms

d. Other rarer symptoms

3. Define the common clinical findings in enteric fever.

4. Make a provisional clinical diagnosis.

5. Exclude other causes of a febrile illness.

6. List the aetiologic agents of enteric fever in India.

7. Outline the pathogenesis of enteric fever.

8. Describe the pathologic changes in typhoid fever especially in the G1 tract.

9. List the probable complications in typhoid fever-related to the

- GI tract, small intestine, liver
- CNS
- Others - DIC

10. Based on the above, outline the steps in the laboratory diagnosis of enteric fever.

11. Indicate what investigations are likely to help in the various stages of the infection.

12. Interpret the laboratory findings, so as to arrive at a confirmatory diagnosis.

13. Interpret the antibiogram and decide on whether the organism will respond to first line treatment or is it a drug resistant strain.

14. Institute appropriate treatment - drugs.

15. Advise on supportive measures in therapy.

16. Detect non response to therapy (in the case of resistant typhoid fever).

17. Detect signs of development of complications of typhoid fever.

18. If no. 16 is present, request immediate expert help for the same.

19. Advise family on prophylaxis of enteric fever.

20. Advise on general hygienic measures to prevent the spread of this and other food water borne infectious diseases.

Learning Objectives : (Good to Know)

21. Outline the factors related to prevalence of enteric fever in the community and specially with regard to seasonal prevalence.

22. Describe the antigenic structure of *Salmonella typhi* and *S.paratyphi A.*

23. List the virulence mechanisms of these organisms.

24. List the mechanisms of drug resistance in *S.typhi*

25. Be familiar with the epidemiology of enteric fever in India.

26. List the various vaccines described to prevent typhoid fever.

TEACHING LEARNING SCHEDULE

Content	Method	Hours	Department	Objectives
Introduction and magnitude of the problem	L	1	Med	1,20,24
Aetiologic agent	L	1	Micro	6,7,8,9,10, 11,12,13,21, 22,23
Pathogenesis	L	1	Path	7,8,9
Pathology	SGD	1	Path	7,8,9
Clinical features	L	1	Med	2,3,4,5
Practical case studies		2	Med	2,3,4,5
Laboratory diagnosis	P/SGD	2	Micro	6,7,8,9,10, 11,12
Treatment	L/SGD	1	Pharm	14,15,16
Prevention & Prophylaxis	SGD	1	Micro	18,19,25

EVALUATION

Designed to assess the student in all the aspects of enteric fever covered in the integrated lecture.

Type of Questions		Marks	Time
1.	Multiple choice questions	30	30 mins
2.	Short answers	50	90 mins
3.	Practicals	30	30 mins
4.	Case discussion & orals	40	60 mins

CHEST PAIN

(G.R. Medical College, Gwalior, M.P.)

Objectives :

The students should be able to :

1. State common causes of chest pain with their specific symptoms, physical signs and appropriate investigations. (A)

2. Read basic ECG (evidence of MI, pulmonary embolism, hypertrophy of various chambers and common arrhythmias). (A)

3. Diagnose from a plain X-ray film of the chest (consolidation, pneumothorax, pulmonary infraction) (A)

4. Present Radiological evidence of bone disease - collapsed vertebrae, paravertebral abscess, fractures. (B)

5. Interpret lab. evidence of blood changes - diagnostic value of enzymes and blood count. (B)

6. Administer emergency treatment of MI, pneumothorax, pneumonias, fractures. (A)

7. Perform cardio-respiratory resuscitation and appropriate drug therapy, mouth to mouth breathing, intubation, intracardiac injection. (A)

8. Diagnose psychological causes resulting in chest pain. (B)

9. Communicate with family members about the prognosis of the ailment. (B)

10. Rehabilitate survivors of cardiac illnesses, respiratory illnesses and other systemic diseases causing chest pain. (B)

11. Adopt preventive measures of IHD, chronic respiratory diseases and infections which cause chest pain. (B)

12. Organise and deliver programmes related to health education for prevention of some of these disorders. (B)

13. Continue to learn about recent advances which have a direct bearing on the performance of these tasks. (B)

A = Must know

B = Good to know

TEACHING LEARNING ACTIVITIES

	Content	Method	Hours	Department
1.	Symptoms and signs	L	2	Medicine
2.	Investigations	L	2	Medicine, Pathology
3.	Basic ECG	P	2	Medicine
4.	Concerned X-ray	P	2	Radiology
5.	Drug therapy	S	2	Pharmacology
6.	Management			
	A) Cardio-respiratory resuscitation B) Use of defibrillator C) Pacing D) Mouth to mouth respiration E) Use of ambu bag F) Paracentesis G) Pericardial aspiration H) Under water seal drainage I) First aid	P	5	Medicine, Surgery, Orthopaedics
7.	Preventive aspects	L	2	Medicine
8.	Rehabilitation	S	2	Medicine

Learning opportunities : L=Lecture P=Practical S = Seminar
L=6 hours P = 9 hours S = 4 hours

Specific Objectives :
For Different Departments

a) Anatomical Aspects : Nerve Supply, Central Connections, Organs innervated (Lecturers, Slides, Demonstrations) - Anatomy.

b) Physiology of Pain : Humoral and Allied factors involved (Lecturers, Diagrams) - Physiology.

c) Mechanism of Action, Doses, Side effects and Indications of various drugs used in management of chest pain due to various causes (Lectures) - Pharmacology.

d) Clinical profile of chest pain (Lectures) - Medicine, Surgery, Orthopaedics.

e) Differential diagnosis of chest pain (Lectures) - Medicine, Surgery, Orthopaedics, Neurology, Oncology.

f) Perform different laboratory investigations to diagnose cause of chest pain (Practical Class) - Medicine, Radiology, Pathology.

g) Interpretation of different investigation reports (Lectures) - Medicine, Surgery, Pathology, Radiology.

h) Steps in the managements of chest pain with special reference to management of complications at periphery and in I.C.U (Lectures, Practical demonstrations) - Medicine, Anaesthesia, Pharmacology.

EVALUATION

While preparing this module the group thought about the best possible "tests" (evaluation tools) to evaluate the course contents of module on Chest Pain which it had prepared, keeping in mind the objectives which had been laid down.

Objective		Suggested test
1.	...	MCQ
2.	...	SAQ
3.	...	SAQ
4.	...	SAQ
5.	...	SAQ
6.	...	SAQ
7.	...	MCQ
8.	...	MCQ
9.	...	SAQ
10.	...	SAQ
11.	...	SAQ
12.	...	CPSCR
13.	...	SAQ

MCQ = Multiple Choice Questions
SAQ = Short Answer Questions
CPSCR = Clinico Psycho-Social Case Review

Total unit could finally be assessed by a long/short case in which many of the above facets are examined and the students ability to synthesis information assessed.

Mother and Child Health Care

(G.R. Medical College, Gwalior, M.P.)

Objectives :

At the end of training, the M.B.B.S. Student should be able to :

1. State the importance of M.C.H. care (A)
2. Register antenatal cases (A)
3. Diagnose normal pregnancy (A)
4. Assess period of gestation (A)
5. Provide antenatal care (A)
6. Assess maternal and foetal well being (A)
7. Undertake normal labour (A)
8. Identify essential newborn care (A)
9. Provide essential newborn care (A)
10. Perform Neonatal Resuscitation (A)
11. Identify and manage Sick Newborn (A)
12. Identify and refer high risk mothers and newborn in time (A)
13. Perform Immunization (A)
14. Diagnose and manage Vaccine Preventable Diseases (A)
15. Diagnose and manage A.R.I. and Diarrhoea (A)
16. Organise, Implement and Evaluate Maternal and Child Health and Welfare Programmes (A)

(A) = Must Know.

TIME FRAME

The training will be provided to students during their clinical posting in the Department of Obstetrics & Gynaecology in the Final Professional years, in eight sessions from 9 - 12 noon, once week. The Departments involved are Obstetrics & Gynaecology, Paediatrics and Community Medicine.

TEACHING LEARNING ACTIVITIES

Components	Methods	Time	Department	Objectives
DAY I				
Introduction: Scope of MCH, Indicators of MCH Care, Organisation, implementation and evaluation of programmes	Lecture	25 Mts	Community Medicine	1,2,16
Vital statistics: Birth rate, Maternal Morbidity and Mortality	Lecture	25 Mts	Obst. & Gynae	1 & 16
Live births, Still births Perinatal & Neonatal and Infant Morbidity and Mortality	Lecture	25 Mts	Paediatrics	1 & 16
DAY II				
Pregnancy: Diagnosis Normal & High Risk Complications of I, II & III Trimester, Abnormal presentation and Medical Disorders	Clinic & Demonstration	2 Hrs	Obst. & Gynae	2,3,4,5, 8 & 12
Effects of high risk pregnancy on foetus: Prematurity, L.B.W. and Respiratory Distress.	Clinic	30 Mts	Paediatrics	7,11 &12
Registration of Pregnant women, Maintaining records, referral system	Clinic	30 Mts	Community Medicine	2 & 12
DAY III				
Antenatal Care: Clinical Examination of Pregnant woman, assessment of gestational age, identification of abnormalities,	Clinic	1½ Hrs.	Obst. & Gynae	5 & 6

Components	Methods	Time	Department	Objectives
clinical monitoring of maternal well being, Nutrition, Immunisation and Preparation for breast feeding				
Assessment of foetal well being, breast feeding, blood grouping	Clinic	30 Mts	Paeditrics	6 & 9
Schedule of A.N.C. Organisation of Antenatal clinic, Nutritional assessment	Clinic	1 Hr.	Community Medicine	2 & 5
DAY IV				
Normal labour, Conduction of normal labour, Management of I, II & III stage of labour.	Clinic & Demonstration	2 Hrs.	Obst. & Gynae	7
Essential care of Newborn: Antiseptic care of cord, skin and eyes; temperature maintenance, identification of malformation, Initiation of breast feeding. Identification of sick newborns.	Clinic & Demonstration	1 Hr.	Paediatrics	9,11 & 12
DAY V				
Abnormal labour, P.P.H., Inversion of uterus, Eclampsia, Injuries to genital tract, Puerperial sepsis.	Clinic	2 Hrs	Obst. & Gynae	8
Early detection of high risk pregnancy and their referral system.	Lecture	30 Mts.	Community Medicine	8 & 12
Effect of abnormal labour on newborn: Asphyxia, respiratory distress and birth injuries	Clinic & Demonstration	30 Mts	Paediatrics	8 & 12
DAY VI				
Neonatal resuscitation: ABC of resuscitation, Anticipatory preparation,	Clinic & Demonstration	2½ Hrs	Paediatrics	10

Components	Methods	Time	Department	Objectives
Essential equipments, identification of newborn requiring resuscitation, Use of Bag, Mask and endo-tracheal tube, oxygen and drug therapy, circulatory support, Evaluation of Newborn.				
Neonatal resuscitation at primary level.	Lecture	15 Mts.	Community Medicine	10
Anticipation of resuscitation.	Clinic	15 Mts.	Obst. & Gynae	10
DAY VII				
Clinical diagnosis and Management of vaccine preventable diseases, Diarrhoea & ARI. Vitamin A prophylaxis, Growth monitoring.	Lecture, Clinic & Demonstration	2½ Hrs.	Paediatrics	14,15, & 16
Prevention of vaccine preventable diseases; Immunization schedule and cold chain.	Lecture & Demonstration	30 Mts.	Community Medicine	13
DAY VIII				
Pregnancy register, ANC and road to health cards Dai Kit, Immunization and cold chain. Referral cards.	Field Visit & Demonstration	3 Hrs.	Community Medicine	2,5,7, 12 & 16

SUGGESTED ASSESSMENT STRATEGIES

Objective	Suggested Test
1.	M.C.Q. & S.A.Q.
2.	M.C.Q., S.A.Q. & Practical
3.	S.A.Q. & Practical
4.	S.A.Q. & Practical & Case Presentation
5.	S.A.Q., Bed side case presentation and viva voce.
6.	M.C.Q, S.A.Q. & Case presentation
7.	M.C.Q., S.A.Q., Case presentation & Viva voce
8.	M.C.Q., S.A.Q. & Practical.
9.	M.C.Q., S.A.Q. & Practical.
10.	M.C.Q, S.A.Q. & Practical.
11.	M.C.Q., S.A.Q & Practical.
12.	M.C.Q. & S.A.Q.
13.	M.C.Q., S.A.Q. & Practical.
14.	M.C.Q., S.A.Q., Case presentation & Viva voce.
15.	M.C.Q, S.A.Q., case presentation & viva voce.
16.	S.A.Q.

M.C.Q. = Multiple Choice Questions
S.A.Q. = Short Answer Questions.

Diarrhoeal Diseases

(Institute of Medical Sciences, Banaras Hindu University, Varanasi-221 005)

Objectives :

To meet the above requirements, 31 specific objectives were identified.

These objectives were then classified as to the behavioral changes intended to be achieved (Cognitive, Psychomotor or affective) as well as the desirable level of the content in terms of

Must Know = A, Good to Know = B

Thus 31 objectives so identified can be classified into :

Learning Domains	Must Know = A	Good to Know= B
Lower Cognitive (LC)	13	2
Higher Cognitive (HC)	12	-
Psychomotor (Psy.)	4	-

At the end of the course on Diarrhoeal diseases, a student should be able to :

1. State the magnitude (incidence & frequency) of diarrhoeal morbidity and motality attributable to it. **LC ; A**

2. State the consequences of diarrhoea (including PEM). **LC ; A**

3. List the common aetiological agents/factors. **LC ; A**

4. Define diarrhoea and dysentery; Acute and chronic and list various types and their characteristics. **HC ; A**

5. Diagnose persistent diarrhoea, **HC ; A**

6. List the environmental and behavioural factors predisposing to diarrhoeas. **LC ; A**

7. Describe the normal physiology of fluid absorption. **HC ; A**

8. Describe acid-base balance. **HC ; A**

9. List various infective of their toxigenic or invasive nature. life cycle of important protozoas causing diarrhoea. **HC ; A**

10. Describe clinical features of different types of diarrhoeas. Able to recognise acute selflimiting infective diarrhoea, Toxigenic diarrhoea, functional diarrhoea and chronic inflammatory disease. Able to differentiate various types and broad aetiological types on clinical grounds. **HC ; A**

11. Diagnose Diarrhoeal diseases and lactose intolerance. **HC ; A**

12. Advise dietary management of secondary lactose intolerance during diarrhoeal episodes. **LC ; A**

13. List the stool characteristics in different infectious and non-infectious conditions. **LC ; A**

14. Perform simple tests like microscopy for OCP, PH, and reducing substances and interpret them. **Psy. ; A**

15. Identify signs and symptoms of dehydration and grade it with special reference to Hypernatraemic dehydration. **LC ; A**

16. Identification of etipathogenesis and management with ORS/IV fluids (Types of dehydration and types of ORS). **HC; A**

17. Describe the local food and fluid intake patterns

and list the locally used fluids useful for rehydration. **LC ; A**

18. Know the ingredients and reconstruction of ORS. **Psy. ; A**

19. Demonstrate reconstitution and administration of ORS. **Psy. ; A**

20. List different methods of rehydration and when to use them by grade of dehydration and dosage. **LC ; A**

21. State the criteria for referral. **HC ; A**

22. State the conditions, appropriate for use of antibiotic or other chemotherapeutic agents. **HC ; A**

23. List the problems associated with use if antibiotic (resistance, toxicity etc.) **LC ; B**

24. List the drugs that should be avoided or used with caution. **LC ; A**

25. List the locally used measures and their metric equivalents. **LC ; A**

27. List/describe the components, organisation and functioning of National programme for CDD critically. List responsibilities of PHC doctors in CDD Programme. **HC ; A**

28. List the agencies which can be collaborated with for successful implementation of CDD, **LC ; B**

29. Render the messages for individual and in community setting for health education to reduce the transmission of disease and avoiding reinfections. **Psy. ; A**

30. Identify the occurence of an epidemic and List the agencies for and pattern of notification in the event of an epidemic. **HC ; A**

31. State the steps of epidemic investigation and epidemic control measures. **LC ; A**

LC = Lower Cognitive objective
HC = Higher Cognitive objective
Psy = Psychomotor objective
A = What student must know
B = What is good to know

TEACHING LEARNING ACTIVITIES

	Content	Method	Hrs	Deptt.	Objective
1.	Diarrhoea: Magnitude of problem, Definitions & Consequences of diarrhoea	L	1	Med./Paed	1,2,4
2.	Physiology of fluid & Electrolyte absorption & Acid base balance	L	1	Physio.	7
3.	Pathophysiology of diarrhoea	L	1	Med.	4,10
4.	Common aetiological agents/Factors, Various infective agents, their characteristics, toxigenic & Invasiveness & life cycle of Protozoal causes	L	2	Micro.	3,8
5.	Clinical features of different types of diarrhoeal diseases, their differential diagnosis, signs and symptoms of dehydration and other complications.	L	2	Med./Paed	4,5,10,11, 13,15
6.	Pre-designed case problems	SGT	2	Paed./PSM/ Micro.Med	4,5,10,11, 12,15,18
7.	Demonstration of ova, cyst, parasite, Leucocytes, RBC, stool pH, in stool characteristic of different infectious diarrhoea.	P	1	Micro.	8, 14, 20
8.	Rehydration therapy, ORS-Construction and demonstration, indication & selection of chemotherapy and antidiarrhoeals, Drugs to be avoided and indications of referal	SGT + P	2	Pharm/Paed.	15, 16, 18, 19, 20, 21, 22, 24

Content	Method	Hrs	Deptt.	Objective
9. Environmental & Behavioral factors predisposing to diarrhoea, locally used measures to control it, local fluid & food intake patterns, and available fluids for ORS. Advise to mothers for feeding during & after diarrhoea.	L + SGT	2	Paed./PSM	6,12,16, 17,18,19, 25,26
10. Management in special conditions with special reference to PEM.	SGT	1	Paed.	11,12, 23,26
11. CDD & OTTU, role of PHC, involvement of other agencies. Epedemic its recognition investigation, control & notification.	L	2	PSM	27-31

L- Lecture
P- Practical
SGT - Small Group Teaching

EVALUATION

Objectives	Suggested test
1 to 6	S.A.Q.
7,8	Essay
9,10	M.C.Q.
11, 12	S.A.Q.
13	S.A.Q
14	Practical
15	Bedside case discussion
16, 17	S.A.Q.
18, 19	Practical
20, 21	S.A.Q.
22 to 25	M.C.Q.
26	Practical
27, 28	S.A.Q.
29	S.A.Q.
30	S.A.Q.
31	S.A.Q.

M.C.Q.=Multiple Choice Question
S.A.Q.= Short Answer Question

Cardio-Pulmonary Resuscitation

(JIPMER, Pondicherry)

1.1 Sub Unit : Basic Life Support

Learning Objectives :

The participant at the end of the training shall be able to :

1. Define Cardio-Pulmonary arrest.

2. Recognise Cardio-Pulmonary arrest.

3. Position the patient properly, and maintain a clear airway.

4. Recognise situations which call for different manoeuvres to clear airway, example, as in :

(a) Chocking,

(b) Near drowning.

5. Perform mouth to mouth respiration.

6. Give external of Cardio-pulmonary resuscitation.

7. Recognise common complications of basic life support like fracture of ribs, regurgitation.

Contents :

(i) Definition of Cardio-pulmonary arrest (CPA)

(ii) Basic anatomy of heart and airway

(iii) How to diagnose cardio-pulmonary arrest

(iv) Causes of Cardio-pulmonary arrest

(v) Clearing and maintaining airway

(vi) Procedure of :

(a) mouth to mouth breathing

(b) cardiac massage

(One man & two men procedures) in adults & children)

(vii) Monitoring efficacy of CPR

(viii) Interpretation of signs of improvement/deterioration

(ix) How to avoid complication like fracture ribs, regurgitation.

- what to do if they set in

TEACHING LEARNING METHODS

(a) **Theory**

Lecture with Audio-visual aids.

Duration - 1 hour.

(b) **Practicals**

Duration - 180 Minutes.

Group size 10 - 15.

Resources - Resuscitation Manikin.

Procedure :

(i) Demonstration of procedures.

(ii) Supervised practice of skills in groups of 2 (10 min)

(iii) Evaluation - 40 min.

EVALUATION

(i) By automatic recording of efficiency of procedure.

(ii) Observation by check-list

1.2 Sub Unit : Advanced Life Support (ALS)

Learning Objectives :

The participant at the end of the training shall be able to :

1. Describe the causes of cardiac and respiratory arrest.

2. Identify situations where an 'airway' has to be used and use appropriate 'airway' as the situation demands.

3. Enumerate the steps involved in endotracheal intubation.

4. Perform endotracheal intubation (desirable).

5. Perform artificial respiration by

(a) Mouth-to-mouth-airway ventilation

(b) Mouth-to-mask ventilation

(c) Using bag-valve-mask units - 'AMBU' BAGS

6. Describe various I. V. fluids used in resuscitation.

7. Start an intravenous infusion.

8. Describe the objectives of drug therapy, the indication, dosage and routes of administration of emergency drugs.

9. Differentiate normal and abnormal electrocardiograms.

10. List the indications and steps of defibrillation.

Contents :

1. Advanced methods of maintaining a clear airway, different kinds of 'airways' available, their indications and use.

2. Proper use of 'Bag-valve-mask' units.

3. Use of simple portable ventilators used for transport of patients.

4. Causes of cardiac arrest.

5. Drugs used in cardio-pulmonary resuscitation, indication-route-dosage.

6. Steps of venepuncture and setting up of an intravenous infusion-choice of fluids.

7. ECG monitoring and defibrillation treatment.

8. Post-resuscitative care.

TEACHING LEARNING METHODS

(a) **Theory**

Duration : 90 minutes

Group sise : 75

Lecture/symposium with audio-visual aids

(b) **Supervised Practice**

Duration : 180 minutes

Group size : 25 per session

(c) **Resource Personnel**

- Anesthesiology
- Medicine
- Paediatrics
- Biochemistry

(d) **Resource Material**

Mannequins - adult

- Peadiatric

Airways and masks

Ambu bag

Laryngoscope

Simpel ventilators

Monitor/defibrillators - Emergency drugs -

ECG strips etc.

(e) **Procedure**

1. Demonstration of procedures, emergency drugs, ECG strips.
2. Supervised practice of skills, in groups of two.
3. Practice cum evaluation - 40 min.

EVALUATION

1. Automatic recording/display on mannequin.
2. Observation by check lists.
3. Effective questioning.
4. Feedback from participants.

First Aid

(JIPMER, Pondicherry)

Aim: To train in effective delivery of "First Aid"

General Learning Objectives :

At the end of the course the learner should be able to:

Recognise Common Medical Emergency situations.

Recruit further help where needed while preventing panic and confusion at the very outset.

Help may be (a) Lay help; or

(b) Expert help such as those from

Ambulance services, Fire services, medical assistance, Police Help, Local Voluntary Organisation.

Institute appropriate and adequate first aid till the expert help arrives.

Carry out rescue and transport as the situation demands.

Select and Use appropriately according to the need

(a) Dressings (b) Bandages (c) Splints

(d) Stretchers (e) First aid kits.

1.2 SUB UNITS OF MODULE

1.2.1 Use of bandages, dressings, splints and first aid kit.

1.2.2 Rescue and transport methods.

1.2.3 Orthopaedic emergencies.

1.2.4 Surgical emergencies including Obstetric emergencies.

1.2.5 Medical emergencies including Psychiatric emergencies.

1.2.1 Sub Unit on Bandages, Dressings, Splints & First Aid Kits

Contents :

1. Description of the various types of Dressings and methods of their application.

2. Explanation of the purpose, the types and the methods of bandaging and the types of bandages and how to bandage.

3. Description of Splints and how to splint.

4. First Aid Kit.

TEACHING LEARNING METHODS

Lecture demonstration and Practice Sessions.

EVALUATION

Objective Structured Practical Examination (OSPE) on :

1. Dressing and bandaging a wound (on hip region).

2. Preparing a splint and splinting for a lower extremity injury.

1.2 SUBUNIT ON RESCUE AND TRANSPORT METHODS IN FIRST AID

Learning Objectives :

At the end of the unit a first aider must be able to :

1. Identify emergency situations when rescue is necessary.

2. Call for lay and expert help when there is no immediate danger to life.

3. Decide on the type of rescue appropriate for the situation.

4. Safeguard himself.

5. Carry out rescue by himself or with the help of more persons.

6. Carry out rescue and transport on a stretcher.

7. Arrange for quick transport of the victim to a nearby field medical centre or a more distant hospital.

Contents :

1. Definition of rescue and transport.

2. Situations when rescue is necessary.

3. 'Do's and Don'ts before rescuing.

4. Method of helping the victim to walk.

5. Method of pulling an unconscious/spinal injury/pelvis and lower limb injury by a single rescuer.

6. Method of carrying a victim by one or more rescuers.

7. Method of carrying a victim by stretcher.

TEACHING LEARNING METHODS

For contents 1,2,3, a lecture.

For contents 4 to 7, Small Group discussion followed by demonstration and practice sessions.

EVALUATION

Objective structured practical examination (OSPE) in the form of a Mock stretcher exercise.

Diabetes Mellitus

(S.C.B. Medical College, Cuttack)

General Objectives :

1. Magnitude of the problem -- Current prevalence of Diabetes Mellitus in different countries and the increasing trend.

2. Epidemiology of the disease.

3. Basic knowledge of Insulin and other diabetogenic factors responsible for Diabetes mellitus.

4. Anatomy with Histology, Physiology, Biochemistry, Pathology including aetiopathogenesis, Pharmacology of antidiabetic drugs including insulin.

5. Clinical profile of Diabetes mellitus.

6. Complications of Diabetes mellitus.

7. Laboratory investigations for diagnosis of Diabates Mellitus and its complications.

8. Management of Diabetes mellitus with special reference to the ability of recognising the onset of complications and referring such cases in time to Referral Centres.

9. Preventing of Diabetes Mellitus.

10. Teaching the community about Diabetes mellitus and teaching the diabetic patients to manage themselves.

11. Continuing medical education of the students about Diabetes mellitus.

Specific Objectives for Different Departments:

The students after completing the course on Diabetes mellitus should be able to :

1. Recognise the magnitude of the problem of Diabetes Mellitus in India and abroad **(Lecture - SPM).**

2. Describe the epidemiology of the disease **(Lecture - SPM).**

3. Describe the anatomy of pancreas and historical study of the different types of cells in the islets of langerhans **(Lecture, Slides Demonstration - Anatomy).**

4. Discuss the synthesis and effects in Insulin on metabolism of carbohydrate, fat, protein, electrolytes and outline the biochemical alternations in insulin deficiency states. **(Lecture, Demonstration of charts - Biochemistry).**

5. Describe the Physiology of Insulin and Antiinsulin factors and Insulin resistance with reference to Insulin receptors. **(Lecture, Diagram - Physiology).**

6. Describe the aetiopathogenesis of Diabtes mellitus and different pathological changes in different organs. **(Lecture - Pathology).**

7. Outline the mechanism of action, dose, side effects and indications of the drugs used in Diabetes mellitus with particular attention to Insulin and oral hypoglycoemic agents **(Lecture - Pharmacology)**

8. Describe the clinical profile of different types of diabetes mellitus. **(Lecture, Medicine, Surgery, Obst. & Gyn.)**

9. Enumerate the different complications of Diabetes mellitus according to different systems and disciplines. **(Lecture, Medicine)**

10. Perform different Lab investigations to diagnose diabetes mellitus and its complications **(Practical Class - Pathology).**

11. Interpret the different investigation reports to diagnose DM, severity of DM and onset of complications. **(Pratical Charts - Pathology)**

12. Outline the steps in management of Diabetes mellitus and its complications with special attention to the limitations of management of complications at periphery and refer the patients with complications to nearest referral Hospital. **(Lecture - Medicine).**

13. State different measures for prevention of Diabetes mellitus in the community and measures for prevention of complications in a Diabetic patients. **(Lecture - SPM and Medicine)**

14. Continue to learn about Diabetes mellitus. **(Handouts giving references)**

TEACHING LEARNING ACTIVITIES

Five effective teaching days with total 10 hours of teaching as follows :

Day	Topic	Time
1	Epidemiology	30 mins.
	Anatomy	30 mins.
	Biochemistry of Insulin	1 hr.
2	Physiology of Insulin	30 mins.
	Pharmacology	1 hr.
3	Pathology Theory	1 hr.
	Practical	1 hr.
4	Medicine, Clinical Profile	1 hr.
	Surgical complications	30 mins.
	Obst. & Gynae. complications	30 mins.
5	Medical Complications & Management	1½ hr.

Iron Deficiency Anaemia

(Siddhartha Medical College, Vijayawada, AP)

Objectives :

Keeping in view the primary care centres, the medical student should be able to :

1. Assess the magnitude of iron deficiency anemia in the society.

2. Diagnose anemia in general and iron dificiency anemia in particular.

3. State causes of Iron deficiency anemia including dietary factors.

4. Differentiate iron deficiency anemia from other similar anemias.

5. Identify clinical manifestations of anemia.

6. Enumerate complications of anemia.

7. Conduct laboratory investigations for confirmation of iron deficiency anemia.

8. Conduct other pertinent investigations in a patient with iron deficiency anemia.

9. Institute appropriate therapy for iron deficiency anemia, both Pharmacological and non-pharmacological.

10. State effects of anemia on pregnancy and the management of such pregnancy.

11. Assess iron overload problem regarding parentaral iron administration.

12. Educate family and society regarding iron deficiency anemia.

Specific Instructional Objectives :

Specific objectives are outlined to meet these requirements of undergraduate students.

These objectives are classified depending on their domain and level of knowledge as follows :

Objective-Domain & Level	Must Know (A)	Desirable to know (B)
High cognitive (HC)	5	--
Low cognitive (LC)	20	11
Affective (AFF)	2	--
Psychomotor (PS)	6	2
Total	33	13

1. Define anemia. (LC-A)

2. Classify anemias as per morphology of red cells. (HC-A)

3. Mention the broad aetiological categories of anemia. (LC-A)

4. Enumerate the normal haemoglobin levels in (a) Neonates (b) Infants (c) Children upto 12 years, adolescents. (d) adult man (e) adult woman (f) during pregnancy. (LC-A)

5. Enumerate the normal red blood cell count in (a) Neonates (b) Infants (c) Children upto 12 years (d) Normal man (e) Normal women. (LC-A)

6. Enumerate the absolute indices in non anaemic (a) Neonate (b) Infant (c) Children upto 12 years (d) Adult man (e) Adult women. (LC-B)

7. Recognise and use hemocytometer components. (PS-A)

8. Enumerate the methods of haemoglobin estimation (LC-A)

9. Outline briefly Sahli's haemoglominometer and estimate haemoglobin in a given sample. (PS-A)

10. Describe the principle of electronic blood cell counters. (LC-C)

11. Describe the method of PV estimation. (LC-C)

12. Describe the site of origin and mode of function of haemopoietic factors. (LC-A)

13. Describe the cell line-age of erythroid cells. (LC-A)

14. What are the different types of Erythroid cells that can occur in the marrow and describe their maturation. (LC-A)

15. Do a reticulocyte count. (PS-B)

16. Describe a reticulocyte, their normal range, and the method of identifying reticulocytes in blood. (LC-A)

17. Describe the normal iron absorption, transport, storage and serum levels. (LC-A)

18. Enumerate broadly the factor interfering with (a) absorption of Iron (LC-A) (b) transport of Iron (LC-B) (c) storage of Iron (LC-C)

19. Enumerate the foods rich in Iron (LC-A)

20. Identify whether the given patient is suffering from anemia. (PS-A)

21. What are the possible cardio-vascular manifestations of anemia in a given case of severe iron deficiency anemia. (LC-A)

22. Out line the laboratory examination required to confirm iron deficiency anemia. (HC-A)

23. Perform a peripheral smear study. (PS-A)

24. Enumerate causes of chronic blood loss anemia. (LC-A)

25. Outline and perform the laboratory examinations suggested to detect :

a) Haematuria (PS-B) b) Malena (LC-B) c) Parasites in motion (PS-A)

26. Enumerate the complications of anemia in pregnancy, labor, puerparium and in new born. (LC-A)

27. Manage the different stages of labour and puerparium in a patient with iron deficiency anemia. (PS-A)

28. Enumerate the causes of iron deficiency anemia that are likely to need surgical intervention. (LC-A)

29. Differentiate iron deficiency anemia from thalassaemia. (HC-A)

30. Educate community to prevent iron deficiency anemia. (AFF-A)

31. Give dietary advise to prevent iron deficiency anemia. (AFF-A)

32. Detect refractory anemia. (LC-C)

33. Enumerate causes of Physiological anemia of infancy. (LC-A)

34. Outline a dietary and drug regime suitable to meet iron demands of pregnancy and lactation. (HC-A)

35. Enumerate the national programmes for anemia prophylaxis. (LC-A)

36. List the current activities under the above programmes. (LC-A)

37. Determine the prevalencee of Iron deficiency anemia in society. (LC-A)

38. Prescribe a rational drug regime for a patient suffering from severe iron deficiency anemia. (HC-A)

39. Out line the drug therapy by oral route in a patient suffering from severe iron deficiency anemia. (LC-A)

40. Identity causes of therapy failure in iron deficiency anemia. (LC-B)

41. List the adverse affects of iron therapy. (LC-B)

42. List the drugs that promote iron absorption from food. (LC-B)

THE DEPARTMENTAL TASKS ARE IDENTIFIED AS FOLLOWS

1. Medicine

a) Definition of anemia, clinical manifestations and Clinical diagnosis of iron deficiency anemia.

b) Therapy, progress, prognosis and complications.

c) Cardio-vascular manifestation and any special features of iron deficiency anemia.

d) Differentiate refractory anemias and therapy failure.

2. Pathology

a) Classification of anemias :

i) morphological

ii) aetiological

b) Causes of Iron deficiency anemia.

c) Lab. investigations of Iron deficiency anemia.

d) Hb, PCV, absolute indices, reticulocytes in anemia.

e) Haemoglobin estimation - Types, Practical

f) Blood cell automation.

g) Peripheral smear in Iron deficiency anemia.

h) Tests for hematuria and malena.

i) Haemosiderosis and Haemochromatosis.

j) Refractory anemia.

3. Physiology

a) Normal haemoglobin level, indices, RBC count, Haemoglobin estimation - Types, practical.

b) Hemocytometer and its uses, PCV.

c) Hemopoietic factors.

d) Erythroid cell lineage - Normal, abnormal.

e) Reticulocytes and reticulocytee count.

f) Iron metabolism in the body.

4. Biochemistry

a) Iron metabolism.

b) Factors interfering with iron absorption and utilisation and Iron overload condition.

c) Dietetics for Iron.

d) Lab investigations - Biochemical - in Iron deficiency anemia.

5. Surgery

Chronic blood loss anemia and surgical intervenstions.

6. Microbiology

Stool examination in an iron deficiency anemia.

7. Obstetrics & Gynaecology

a) Complications of an iron deficiency anemia during pregnancy, labour, puerparium and in the new born.

b) Iron demands during pregnancy and lactation.

c) Management of stages of labour in a patient with Iron deficiency anemia.

8. Paediatrics

a) Differential diagnosis of anemia and thalassemia.

b) Neonate of an Iron deficiency anemia mother.

c) Anemia in the new born, physiological anemia of infancy.

9. Pharmacology

a) Rational drug therapy for Iron deficiency anemia.

b) Complication and adverse effects of Iron therapy.

c) Causes of therapy failure.

d) Adjuvant therapy in Iron deficiency anemia.

10. Community Medicine

a) Maagnitude of problem of Iron deficiency anemia.

b) Community education of Iron deficiency anemia and dietary advise.

c) National programme for anemia prophylaxis.

d) Current activities of anemia prophylaxis programme.

TEACHING LEARNING ACTIVITY

Department	Time	Topic Contests	Method	Objectives
Medicine	1 hr.	Definition, clinical manifestations and diagnosis of iron deficiency anemia.	L / Pr /	1,20.
Community Medicine	15 mts.	Magnitude of problem of iron deficiency anemia in society	SGT/IT	37.
Physiology	1 hr.	Normal erythoroid cells, haemopoiesis & abnormal cell lines.	SGT/IT/L	12,13,14, 16,23.
Physiology	30 mts.	Iron metabolism	SGT/L	17.
Biochemistry	30 mts.	Iron metabolism, factors affecting iron matabolism, dieteties and body needs of iron	SGT/L	17,18,19, 20.
Physiology	5 hrs.	Normal haemogram & Indices	Practiclas	4,5,6,7,8,9, 11,15,16.
Pathology	30 mts.	Classification of anemias and causes of iron deficiency anemia	SGT/L/IT	2,3.
Pathology	40 mts.	Lab investigations of iron deficiency anemia	SGT/IT	8,7,9,10, 11,15,16, 22,23,25.
Biochemistry	15 mts.	chronic blood loss anemia parasites causing		
Microbiology	5 mts.	iron deficiency anemia and automation in blood indices.		
Surgery	20 mts.	Chronic blood loss anemia	SGT/IT	24,28.
Medicine	20 mts.	Cardiovascular manifestations and special features in a patient of severe anemia	Pr SGT/IT	21.
Obstetrics & Gynaecology	30 mts.	Iron demands of pregnancy and lactation	L/SGT	34.
- do -	45 mts.	Anemia complicating pregnancy	L/SGT	26.
- do -	30 mts.	Management of labour in a patient of iron deficiency anemia	SGT	27.

Department	Time	Topic Contests	Method	Objectives
Obstetrics & Gynaecology	1 day	Management of labour in a patient of iron deficiency anemia	Practical during Internee or clerkship	27.
Pediatrics	20 mts.	Neonate of Iron deficient mother.	SGT/Pr	33.
Pediatrics	20 mts.	Thelassaemias.	SGT/Pr	29.
Pharmacology	40 mts.	Treatment, adjuvant therapy, therapy failure, complication of drugs and iron overload, of a patient of iron deficiency anemia.	SGT/L	38,39,40.
Medicine	30 mts.	Drug prescription, progress, prognosis and complication of a patient with iron deficiency anemia.	SGT/L/IT	38,34,41.
Medicine	30 mts.	Refractory anemia, assessment of drug effects and therapy failure.	SGT/IT	32,40.
Community Medicine	15 mts.	Community education for iron deficiency anemia.	SGT/IT	30,31.
Community Medicine	30 mts.	National programme of anemia prophylaxis and current activities with reference to above.	SGT/IT/L	35,36.

EVALUATION

The following mode of evaluation is planned for the above module.

1. Periodic evaluation : Pre & Post module evaluation with MCQs done to test the efficiency of teaching and the results analysed.

2. Case studies, practicals and lectures are conducted at different periods of MBBS carriculum.

3. Integrated teaching sessions of 2½ hours each, two in number are arranged during of the semester : One for basics of erythropoiesis, lab investigations, and community aspects. The second for clinical aspects of the patient suffering from iron deficiency anemia, lab investigations, prognosis, therapy and management of complications.

4. Summative evaluation during 8th semester after both the integrated teaching, as follows :

Pattern of evaluation	Time	No. of questions	Objectives tested
Case study	45 mts.	10-15	20.
Practicals	1 hour	10-15	9,15,23,25.
Viva Voce	10 mts.	10-15	35,26,27,40,41, 42,33,34,38, 1,2,3,7,8,12, 14,17.
MCQ	50 mts.	50	32,29,28,4,5, 6,12,18,19,24.
SAQ	60 mts.	6	40,41,42,39,36, 35,27,10,11,12, 13,14,15,16,17, 21,22,23,24,26, 34,28,30,32,33.

1. One question paper of 1 hr. - FN
2. One practical + Viva Voce - 1 hr. & 10 mts. - AN
3. One case study and presentation - 45 mts. - AN

HYPERTENSION

(Siddhartha Medical College, Vijayawada)

General Objectives :

Students should be able to :

1. Diagnose hypertension with the help of Clinical Examination.

2. Specify the type of hypertension with the help of suportive investigations.

3. Suggest and institute appropriate therapy for the disease which includes non-pharmacological and pharmacological therapy and choice of drugs.

4. Suggest and institute appropriate measures during pregnancy where the patient is hypertensive.

5. Monitor the prognosis and complications in hypertension.

6. Manage the complications due to hypertension.

7. Advise the family members about the problems with hypertensive patient and educate the society on preventive measures.

8. Continue to learn about the new and note-worthy progress in the subject of hypertension.

Specific Objectives :

On the basis of task analysis of M.B., B.S., Doctor at the primary centre in rural area in mind, the medical student must be familiar with :

1. Diagnosis of hypertension and magnitude of the problem.

2. Typing of hypertension.

3. Clinical manifestation in a hypertensive patient.

4. Complications of hypertension.

5. Occular changes in hypertension.

6. Lab. Investigations of hypertension.

7. Appropriate therapy for each type of hypertension.

8. Management of complications and knowledge about when and how to refer the hypertensive patient with complication.

9. Therapy of hypertensive during pregnancy and complication of hypertension during pregnancy.

10. Advice the family member and educate the society about the care and prevention with emphasis on diet and habits.

11. Update Hypertension

Fifty eight specific objectives are outlined to meet the requirement of U.G. Student.

These objectives are classified as cognitive and phychomotor as well as the desirable level of content (A-must know; B-Good to Know).

The fifty eight objectives are classified as follows :

	Must to Know (A)	Good to Know (B)
Higher Cognitive (HC)	23	12
Lower Cognitive (LC)	8	7
Psychomotor (PM)	7	1

At the end of module student should be able to:

1. Define the following (HC-A)

a) Systemic arterial blood pressure

b) Systolic blood pressure

c) Diastolic blood pressure

d) Pulse pressure

e) Mean arterial blood pressure

f) Normal values and their relationship with age.

2. Describe the methods, Principle and Technic behind the measurement of systemic arterial blood pressure in human and perform them. (PM-A)

3. Describe neural, renal and endocrinal control of arterial blood pressure. (HC-A)

4. Define hypertension. (HC-A)

5. Outline the magnitude of the problem. (HC-A)

6. Outline the clinical symptomatology and physical signs of examination. (HC-A)

7. Enumerate types of hypertension and mention secondary causes. (HC-A)

8. Outline the pathogenesis of secondary hyptertension. (HC-B)

9. Outline the evaluation of renal function and mention the importance of creatinine level in blood and urine to evaluate the importance of renal impairment and associated hypertension. (HC-A)

10. Outline the role of mineralocorticoids, catecholamines, renin and vasopressin in resulting hypertension. (LC-A)

11. Outline the pathogenesis of endocrine hypertension. (LC-A)

12. Enumerate causes of secondary hyptertension (Surgical) (LC-A)

13. Recognise surgicaly treatable cases of hypertension. (LC-B)

14. Evaluate a hypertensive patient before surgery. (HC-A)

15. Prepare hypertensives for surgery. (PM-A)

16. Outline the pathogenesis of vascular hypertension. (LC-B)

17. State the importance of genetic predisposition. (LC-A)

18. Outline (a) the role of electrolytes in the maintenance of blood pressure, (b) pathogenesis of essential hypertension and (c) the alterations in electrolytes in hypertension. (LC-B)

19. Outline the pathogenesis of malignant hypertension. (LC-A)

20. Mention the basic pathological changes of essential and malignant hypertension. (HC-B)

21. Outline the pathogenesis of hypertensive retinopathy. (LC-A)

22. Enumerate the changes seen in the retina due to hypertension. (PM-A)

23. Mention the clinical features of hypertensive retinopathy. (HC-A)

24. Classify hypertensive retinopathy. (HC-B)

25. Enlist the causes of visual loss in Hypertension. (HC-B)

26. State prognostic significance of hypertensive retinopathy patients with severe hypertensive retinopathy. (LC-B)

27. Mention characteristic features of retinopathy of hypertensive with kidney disease. (LC-B)

28. Classify hypertensive disorders in pregnancy and mention their incidence. (HC-A)

29. Outline the vascular and haemodynamic changes of pregnancy. (HC-A)

30. Mention the effects of hypertension on pregnancy. (HC-A)

31. State the placental and foetal changes in hypertension complicating pregnancy. Discuss the causes of perinatal mortality in such a case. (HC-B)

32. Mention the retinal changes in toxaemia of pregnancy. (PM-A)

33. Mention the occular signs of hypertension with pregnancy. (PM-A)

34. Advise on time of termination of pregnancy and predict the visual prognosis in such cases. (HC-A)

35. Mention the role of circulatory lipids in hypertension. (HC-B)

36. Outline the effects of high blood glucose on endothelial cell membranes and its relationship to bring about hypertension. (LC-A)

37. Use the routine Lab. Investigations and state their importance in diagnosis. (PM-A)

38. State the urinary findings of benign nephrosclerosis. (HC-B)

39. State the urinary findings of malignant nephrosclerosis. (HC-B)

40. Outline the role of special investigations. (LC-A)

41. Mention the drugs used in the treatment of hypertension. (HC-A)

42. Classify antihypertensive drugs by their primary site of mechanism of action. (HC-A)

43. Describe the pharmacological actions, adverse effects, therapeutic uses, does and preparations of commonly used centrally acting antihypertensives. (LC-B)

44. Name the antihypertensive agents that act by ganglionic blockade. Describe the mode of administration and therapeutic uses of commonly used ganglionic blocking agents. (HC-B)

45. Name the antihypertensives that act by adrenergic neuron blocking action and mention their role. (HC-A)

46. Discuss the role of B.Blockers in the treatment of Hypertension. (HC-A)

47. Name the arteriolar vasodilators that are used in the management of hypertension. Describe their mechanism of action along with their advantages and disadvantages. (HC-B)

48. Describe the role of calcium channel blockers in the treatment of hypertension along with their mode of action. (HC-A)

49. Name the ACE inhibitors that are used in the treatment of hypertension. Describe their advantage over the other antihypertensives. (HC-A)

50. Describe the role of thiazide diuretics in the treatment of hypertension. (HC-B)

51. Discuss the non-pharmacological modes of management of hypertension including diet. (HC-A)

52. Describe the management of various grades of hypertension with stress on selection of therapuetic agents. (HC-A)

53. Describe the management in hypertensive emergencies including malignant hypertension. (HC-A)

54. Mention the complications. (HC-B)

55. Mention the consequences and complications of longstanding benign/malignant hypertension. (HC-B)

56. Suggest measures to prevent hypertension. (HC-A)

57. Suggest the advice to be given to the family members of a hypertensive patient. (PM-A)

58. Educate community in prevention of hypertension. (LC-B)

TEACHING LEARNING ACTIVITY

CONTENT	METHOD	MINUTES	DEPART-MENT	OBJECTIVES
Measurement of Blood Pressure	P	10	Med.	2.
Physiological variations of Blood Pressure	IT	10	Physi.	1,3.
Diagnosis Hypertension & Magnitude of problem of Hypertension	IT	10	Med.	4,5,6.
Signs, Symptoms & Clinical aspects of hypertension	IT	15	Med.	4,5,6.
Types of Hypertension	IT	5	Path.	7.
Surgical Aspects of Hypertension	IT	10	Sur.	12,13,14,15.
Treatment of Hypertension	IT	10	Pharm. Med. Bio.	41 to 52.
Complication of Hypertension and their management	IT	10	Med.	43,54,55.
Pathogenesis and Pathology of secondary hypertension	IT	10	Path. Bio. Med.	8,9,10. 11 16

CONTENT	METHOD	MINUTES	DEPART-MENT	OBJECTIVES
Pathogenesis and Pathology of Essential, Benign and Malignant Hypertension	IT	15	Path. Bio. Med.	17,18 19,20 35,36
Occular changes of hypertension and their progress prgnosis	IT	10	Opth.	21,22,23, 24,25,26,27, 32,33,34.
Laboratory investigations of a case of Hypertension	IT	15	Path. Bio.	37,38, 39,40
Hypertension complicating pregnancy	IT	10	Ob.Gy.	28 to 31
Preventive aspects of Hypertension	IT	10	Com. Med. Bio.	56,57 58

P = Practical
IT = Integrated Treaching
Total = 2½ Hrs.

EVALUATION

Blood pressure is recorded for each long case during ward & OP postings. Recording of B.P. is valued at the time of long case.

Summative Evaluation : (at the end of integrated teaching) during class exams. & prefinal examination in departments of Pathology & Medicine.

Periodic evaluation - after 2 sessions of 2 hrs. each of integrated teaching.

Test	**No. of Questions**	**Time**
S.A.Q.	6	1 Hour
MCQ	30	30 Minutes
Vivavoce	—	15 Minutes
Practical	—	2 Hours
Case Study	1	45 Minutes

The Objectives specified are planned for evaluation in the following pattern.

Pattern	**Objectives**
S.A.Q.	3,4,5,7,8,11,16,19,21,24,35,45,49,50.
M.C.Q.	1,9,12,13,14,20,22,23,35,41,42,43,44,46, 47,48.
Practical	2,15,37,38,39,40.
Vivavoce	5,10,17,18,25,26,27,51.
Case Study	28 to 34; 52,53,54,55,56,57,58.

JAUNDICE

(St. John's Medical College, Bangalore)

Objectives :

At the end of the presentation of the Module a student must be able to :

Recognise the extent of the problem of Jaundice in India and in the local area.

List the conditions/diseases where Jaundice occurs as a symptom.

Take a careful history, conduct a physical examination, select relevant laboratory investigations in order to establish the cause of Jaundice.

Manage a case of Jaundice at the Primary Health Centre while recognising the limitations.

Recognise signs or symptoms that warrant referral to a better equipped hospital.

List the important methods of preventing Jaundice.

Specific Learning Objectives :

Cognitive Domain = C.D., Psychomotor Domain = P.D., Affective Domain = A.D.

At the end of the module presentation a student should be able to :

Recognise Jaundice as a symptom of a variety of diseases. (A.D.)

Quote the morbidity and mortality data pertaining to this problem at the national and local scenes. (C.D.)

Surface mark the biliary apparatus. (P.D.)

Recognise the histology of the liver, gall bladder and bile duct. (C.D.)

Describe the exact relation of the biliary apparatus to the other viscera in the abdomen. (C.D./P.D.)

Differentiate between normal and abnormal development of the biliary tract. (C.D.)

List the steps involved in the synthesis and break down excretion of bilirubin. (C.D.)

List the steps at which derangements of bilirubin synthesis and excretion can occur. (C.D.)

List the enzymes which are affected in liver disease, their normal values and methods of assay. (C.D.)

Recognise the rationale in assaying levels of these enzymes in the diagnosis and differentiation of prehepatic, and posthepatic causes. (C.D., P.D.)

Interpret enzyme profiles and their use assessing prognosis in cases of Jaundice. (P.D., A.D.)

Perform a test to detect bile pigments in the urine.

List the common bacterial, viral, protozoal, helminthic and fungal aetiology of infections of the biliary tract that manifest as Jaundice. (C.D.)

Describe pathogenesis of these infections in view of diagnosis and prevention. (C.D., P.D.)

Describe the important pathological changes in the biliary tract in infectious and in noninfectious causes of Jaundice. (C.D.)

List commonly prescribed drugs that induce Jaundice. (C.D.)

Take a detailed physical examination of all the systems which will aid (a) diagnosis (b) lead to the possible cause, and (c) assess prognosis. (P.D., A.D.)

List and interpret the relevant laboratory investigations which will aid in (a) diagnosis (b) lead to the possible cause, and (c) assess prognosis. (P.D., A.D.)

List and interpret the relevant laboratory investigations which will aid in (a) diagnosis (b) indicate specific aetiology (c) prognosis. (C.D., P.D., A.D.)

Describe steps in the therapeutic/clinical management of acute viral hepatitis, chronic hepatitis and cirrhosis liver. (C.D., P.D.)

List the common complications and sequelae in the above three clinical diseases. (C.D.)

Recognise the need (at times) of non-operative management of obstructive Jaundice. (P.D., A.D.)

Discern the need for rational use of newer therapeutic measures in the management of Jaundice. (P.D., A.D.)

Appreciate the newer imaging techniques in the diagnosis of Jaundice. (P.D., A.D.)

List the common causes of obstructive Jaundice (prehepatic, hepatic and post-hepatic). (C.D.)

List the surgical corrective procedures possible at the three levels of health care delivery. (C.D.)

Recognise the importance of counselling with Alcoholic Jaundice, Jaundice as a result of drug abuse. (A.D.)

Recognise and refer cases requiring psychiatric management and counselling. (P.D., A.D.)

List the methods by which the spread of Jaundice can be controlled and prevented.

(a) in individuals (b) in the community (c) within the hospitals. (C.D., P.D., A.D.)

TEACHING LEARNING ACTIVITIES

Method	Topic	Dept.	Duration
SESSION 1			
	Pretest		20
Lecture	Mortality & Morbidity National & local data	Medicine	20 min.
SESSION 2			
Lecture Demonstration	Normal Structure of biliary tree	Anatomy	40 min.
SESSION 3			
Lecture	Breakdown of RBCs Biliary metabolism	Physio	60 min.
Lecture	Normal levels of enzymes	Biochem.	30 min.
Discussion Demonstration	Tests of Assy of enzymes	Clin. Bioc	30 min.
SESSION 4			
Lecture	Infections of liver	Micro	40 min.
Practicals	Interpretation of tests	Micro	60 min.
SESSION 5			
Lecture	Pathology of Biliary tract	Path	45 min.
Practicals & Demonstration	Slide Session	Path	45 min.
SESSION 6			
Lecture & case discussion	Clinical management of Jaundice	Medicine	60 min.
SESSION 7			
Lecture	Jaundice in Pediatrics	Pediatrics	60 min.
SESSION 8			
Lecture & Case discussion	Neonatal Jaundice	Neonatology	60 min.
SESSION 9			
Hand-outs	Drug induced Jaundice	Pharmacology	20 min.
SESSION 10			
X-Rays & Discussion	Radio diagnosis with relevance to Jaundice	Radiology	40 min.

Method	Topic	Dept.	Duration
SESSION 11			
Lecture	Therapeutic management of Jaundice	Medicine	60 min.
	Video learning aid	Jaundice	90 min.
SESSION 12			
Lecture and Bedside clinic	Surgical management	Surgery	60 min.
SESSION 13			
Lecture	Psychiatry & Counselling	Psych.	30 min.
Lecture	Prevn. of Jaundice	Comm. Med.	30 min.
SESSION 14			
Post Test Evaluation			

Section - IV

This section gives an overview of the tasks undertaken by the consortium institutes for future work. This includes delineation of teaching learning methodology, assessment strategies, production of learning materials, health systems research and dissemination. The agenda also includes expansion of consortium institutions for enhancing the process of change.

Tasks Ahead

Section 2 and 3 of this monograph give compilation of the core curriculum, the essential skills, courses on behavioural science and ethics and series of integrated teaching modules for undergraduate medical education.

Though consortium has been able to achieve a considerable degree of success in restructuring medical education curriculum, it is duly acknowledged that the tasks ahead are far more challenging and vital for producing a definite impact.

The delineation of appropriate **teaching learning methodology** is an important factor for the smooth implementation of the curriculum document. It is, therefore, necessary to work out the details of the same.

It has been recognised that the most important component in curriculum is the **assessment strategy** which overrides other components. It is, therefore, inevitable to work out a comprehensive assessment strategy for measuring the learning outcome.

It will be pertinent to monitor and evaluate the effectiveness of the innovations which are being implemented by various consortium institutes. Appropriate indicators need to be developed for evaluating the process as well as the impact. It is also necessary to promote **health systems research (HSR)** on a continued basis.

Most of the medical colleges in India are ill-equipped to produce **learning resource materials** on their own. It is, therefore, necessary to think of a central

co-ordinated mechanism to produce these materials with collective effort, try-out, finalise and disseminate to all other institutes.

Effective dissemination of the information pertaining to the data base, teaching learning methodology , assessment and other innovations, is considered not only desirable but also essential. For this purpose it is proposed to start a journal, **'Trends in Medical Education'.**

It is envisaged to **expand the consortium** while continuing the inquiry process in eight colleges. This is proposed to be achieved by a mechanism in which each institute works with one or two medical colleges in the region, initiates inquiry process and shares experience with the same. This can be achieved through joint forums-workshops or, exchange visits depending upon the local situation. The institutions involved are listed in the figure.

For the successful implementation of these programmes, the essential instruments have to be developed. In order to utilise the available human resources and their expertise, the tasks ahead are being assigned to each of the consortium institutions. These are:

1.	Teaching Learning Methodology	IMS-BHU, Varanasi
2.	Assessment Strategy	JIPMER, Pondicherry
3.	Health Systems Research	CMC, Vellore
4.	Learning Resource Materials	AIIMS
5.	Dissemination of information	St.John's Med. College, Bangalore
6.	Expansion of the consortium	All Institutions by twinning

The specific details in respect of each of the task forces are given below:

1. TEACHING LEARNING METHODOLOGY

Specific Objectives :

- To produce a resource book (hand book) for indicating:

  a) general guidelines for teaching-learning (b) specific suggestions for certain topics of national thrust.
- To sensitize a group of medical teachers in applying innovative teaching methods and play leadership role at a regional/local level
- To try-out integrated teaching modules on specific needbased topics and to consolidate their findings.
- To set up a regional resource centre for teaching learning methodology.

Methods and Approaches :

The task force will consist of 6-8 medical educators drawn from pre, para and clinical disciplines. It will hold preliminary meeting to plan for two workshops (national) of 3 days duration each targetted at preparing teaching learning methodology for topics of Thrust. About 30 participants belonging to preclinical (10), paraclinical (10), and clinical (10) drawn from local (10) and outside (20) medical colleges will be invited for this workshop. The workshop deliberations will be synthesized into a resource book.

At the end of the first year the task force will hold two onsite workshops in two medical colleges of U.P. These workshops would enable the taskforce to sensitize a new group of teachers who will be able to try out these methods in their colleges and send feed back to the taskforce. The taskforce will consolidate the resource book and present it to the consortium.

A learning resource centre will be established for housing the learning materials and for dissemination which will be equipped with computer, photocopier, fax machine etc.

Proposals for Evaluation and Follow up :

The workshops will have in-built evaluation in the form of session evaluation and course evaluation questionnaires. The efficacy of the resource book will also be evaluated by circulating a questionnaire to selected medical colleges and obtaining their feedback.

2. ASSESSMENT STRATEGY

Specific Objectives :

- To critically review the existing methods used for evaluation in undergraduate medical education for their strengths and weaknesses.
- To develop/refine tools/instruments capable of measuring learning outcomes of three domains (cognitive, affective including communication and psychomotor skills).
- To suggest alternate or additional methods, if any, which are applicable to formative and summative types.

Methods and Approaches :

The Taskforce will consist of 6-8 medical educators based at JIPMER, Pondicherry. It will deliberate separately on each of the following issues:

i) The task force will appraise the current situation by administering a questionnaire to medical college faculty and students.

ii) The task force will hold planning meeting, each of three days duration, to prepare for the workshops for designing instruments.

iii) There will be one or two workshops of three days duration. Each workshop will have 10 outstation participants and 10 local participants from diverse disciplines with proven experience in medical education technology. Each workshop will deliberate on specific issues mentioned earlier and prepare tools/instruments.

Proposals for Evaluation and Follow up:

i) Pre-and post test and programme evaluation of workshops

ii) The instruments developed would be tried first at

JIPMER. Opinion of teachers and students would be obtained.

iii) Later, they will be tried-out in other consortium institutions.

iv) A report will be prepared and submitted.

3. HEALTH SYSTEMS RESEARCH

Specific Objectives :

- To create an awareness and sensitize faculty and students regarding HSR.
- To enable consortium institutes to carry out HSR using a common protocol.
- To identify and overcome impediments in popularising HSR.
- To use HSR as a basic determinant for curriculum planning and community oriented education.

Methods and Approaches :

An initial workshop will be conducted with three members from each institution to discuss methods of health system research and to identify the topic for research to be carried out. A common protocol will be prepared. The role of the faculty and students and the method of assessment of the students will be discussed.

Each member institution will identify a rural or urban community. The protocol will be field tested. A review meeting will be held 4 to 6 months later to analyse the results of the pilot study and to improve the protocol. Using the modified protocol, data will be collected from the community for one year. Institutions where the pilot study is unsatisfactory will not be included in the second phase. Quarterly reports will be sent to the coordinating institutions to be disseminated to the member institutions, State and Central Governments in the form of a news letter. Feed back will be sent to each institution at the end of one year. The project will be for three years.

The studies will provide information related to health conditions and will also document involvement of students and the faculty. Teaching methods, duration of the

programme, period of the MBBS course when students are involved and the students assessment in the community will be documented. The finding will be used to prepare a teaching module on community based education which will be disseminated through the journal of the consortium.

Proposals for Evaluation and Follow up :

The effectiveness of the workshop will be determined by administering questionnaire to the participants in the form of daily evaluation, session evaluation and programme evaluation. The quality of the HSR carried out by each institution will also help to assess the effectiveness of the workshop.

4. LEARNING RESOURCE MATERIALS

Specific Objectives:

- To organize planning, production and dissemination of learning resource materials on need based topics.
- To strengthen/utilize the existing infra-structure for producing learning materials.

Methods and Approaches to be Used :

The taskforce on learning resource materials will consist of three core faculty and five satellite faculty coopted according to the content of the LRM to be produced.

The Strategy Involves :

(i) Identification of areas/topics for the production of LRMs.

(ii) Planning meeting of the taskforce for organizing two workshops (four meetings).

(iii) One workshop for producing prototype LRMs (four) consisting of 10 local and 20 outside participants drawn from diverse disciplines.

(iv)Try-out of the materials in select colleges and obtain feedback (to be done subsequently)

(v) Finalization of the materials; reproduction and distribution through meetings (to be done subsequently)

The K.L. Wig CMET at AIIMS has the infrastructure for the production of learning materials in print and other media such as tape slides, video etc. The actual cost of

production is proposed to be reimbursed from the project funds. The services of production personnel and technical staff will be hired.

Proposals for Evaluation and Follow up :

The effectiveness of the meetings and workshops will be judged by means of session evaluation and program evaluation questionnaire. Indicators will be developed for evaluating the effectiveness of the learning resource materials.

5. DISSEMINATION OF INFORMATION

Specific Objectives :

- To establish proper information and dissemination system for consortium activities.
- To share consortium experiences with larger audiences both nationally and internationally.
- To put on record the updated national developments in the field for posterity.
- To make available international information in an abridged and meaningful form.

Methods and Approaches :

i) St. John's Medical College will identify a group of eight faculty members belonging to diverse disciplines to constitute the task force for dissemination.

ii) The task force will plan and initiate publication of a journal entitled "Trends in Medical Education" twice a year.

iii) The editorial board will be continuously in touch with the consortium institutes to receive information or reports on their activities which will be synthesized and published in the journal.

iv) A computerized system of publication will be developed to enable each of the consortium institutes to quickly access information.

The editorial board will hold three meetings for bringing out one issue - viz, for planning, selecting suitable articles

or refer back for modification, and considering the modified article.

In addition the editorial board members will work individually to perform editorial function.

Proposals for Evaluation and Follow up :

The draft of the journal will be thoroughly screened by the editorial board by developing suitable indicators for the purpose. It is also proposed to circulate questionnaire to the readers to judge the usefulness of the journal and their suggestions will be incorporated for improving the quality of the journal.

6. EXPANSION OF THE CONSORTIUM

Specific Objectives:

- To initiate inquiry driven strategy in two institutes;
- To enable the associate institute to collect database, identify curricular deficiency and adopt suitable innovation.
- To promote leadership in medical education by facilitating a multidisciplinary approach to curriculum development.

Methods and Approaches to be Used :

(i) A group of eight faculty from each of the eight institutes will site visit the new institute(s) for initiating them into consortium.

(ii) To hold an on-site workshop at the associate institute to sensitize them in inquiry driven strategy.

(iii)The newly associated members would conduct inquiry, collect data on mortality/morbidity etc. alongwith information on existing curriculum.

(iv)Some of the innovations identified by the consortium will also be tried out in the new institute.

(v) There will be constant interaction between existing and new member to share information on their experiences.

Proposals for Evaluation and Follow up :

The consortium institutions will develop suitable indicators to judge the diffusion of inquiry driven approach into the newly associated institutes. The workshop will have inbuilt evaluation through session and program evaluation questionnaires.